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MORE AIRCRAFT LAND ON GOODYEAR TIRES THAN ON ANY OTHER KIND

Care and Feeding of Feederlines

SLOWLY BUT STEADILY, feeder airlines are being added to our national network. While it is unquestionably true that some of the original line decisions involve costly problems, it is also true that speed in settling them is vitally important. In several regions, operators are pioneering the routes at continual expense to themselves in the hope of rendering better service of and when certification are forthcoming. In the decisions, consideration should be given to those operators who have already demonstrated high efficiency. And CAA should realize that each day's delay will weaken the prospective operator's financial condition.

It is also important that greater operators compare their costs most carefully and allow for inevitable increases in expense before determining the rate of mail pay to be requested. Although it is considerable to ask for low rates, it should be remembered that it takes time to obtain an increase if unforeseen events demand it. And overhead keeps mounting on.

Experience has indicated the inadequacy of the

25¢ per-plane-mile rate. CAA could save valuable time and operators' resources, and still be acting within the realm of public interest, if new operators were encouraged to allow a reasonable station in occupying requested rates.

There has been some indication on the part of CAA to think of feederline operators in the same terms as the scheduled trunk lines. Nothing could be more devastating to a new industry which cannot survive unless its operating costs are substantially lower than that of the trunk lines. Every effort must be made to eliminate all unnecessary expense to operators in compliance with regulations.

Communications and airport authorities also should realize that changes against feeder operators must be lower than those for the larger lines. Feederlines contribute to the transportation facilities of any community and must be encouraged, at least during their early growth. Only by close cooperation of all concerned can this new and important experiment in the field of transportation be expected to be truly successful.

Let's Re-Examine the Flying Boat

MOST MAJOR AIRLINES have turned their operations to the use of landplanes, even in transoceanic operations and for sound and sufficient reasons. At the same time, they are greatly overworked, as should be, over the rapidly rising cost of large airport facilities and the increasing distance of landing areas from other centers. These two facts add up to something which will probably sound heretofore to the operations engineer: It is time to re-evaluate the seaplane.

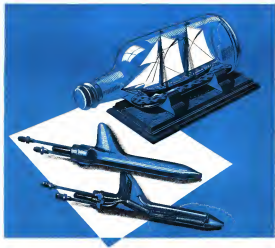
Both major city and most minor ones have almost unlimited runway areas on the waterfronts at their very doorsteps. No matter what happens, it is most unlikely that airlines will escape sharing some part

of the rising cost of land terminals. And ground transportation to airports grows more complex every day.

In the meantime, real progress has been made toward greater efficiency in the design of flying boats and seaplanes. Some progressive operator with an open mind should start immediately to survey the realistic future cost of terminal facilities and, in the respect, appraise the increased utility of water craft.

Leslie E. Duvall

EDITOR



Building the bottle around the ship...

the ship-in-a-bottle puzzle is easily solved upon observation. But the enclosure of half a dozen elements within the Kollsman puzzle has baffled many. There is no apparent way by which they could have been inserted... except, as some have jokingly observed, "to build the bottle around the ship!" That is precisely how it is done, the internal elements of the tube being cut in a feasible mold, the mold heavily electroplated, and the mold material melted out. This is but one of many Kollsman techniques developed to solve special problems in flight measurement and control.

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AVIATION, March, 1947

STEATON, March, 1947

HOW YOU CAN MAKE THEIR JOB



EASIER!



by suppressing
radio interference, with

FEDERAL'S VHF RADIO RECEIVER 139-B

TO THE MEN who operate these nerve centers of the airports, local radio interference is still a major problem. That's why they will welcome Federal's new VHF radio receiver 139-B—for it is especially designed to suppress radio interference from unbalanced ignition systems of ground vehicles and small planes. This is accomplished by a peak-clipper type noise suppression circuit which "clips" in the signals with greater clarity—permitting reception under higher noise levels, thus adding greater communication efficiency. Write today for complete information, Dept. A476.

FEDERAL'S OTHER AIDS to aerial navigation include the following:

Radio-Beacon System (for and ground)
Automatic Landing System
Precision-Altitude Reference Unit
#1 Ground Guide
#2 for Precision-Altitude Reference
Medium Power Ground Station Transmitter (200, 400, 800)
VHF Aircraft Navigation System

FEATURES

1. Designed for mounting in 1/2 rack relay rack
2. Front panel removable by two snap fasteners for easy access to wiring and components
3. Designed for unbalanced 200 KC channel receiver type
4. Third order crystal-controlled single superhet circuit with 14 tubes
5. Peak-clipper type noise suppression circuit
6. Separate circuit with adjustable threshold
7. Includes provision for remote of gain control
8. Amplified AVC
9. All adjustable elements accessible without the removal of other components
10. Low oscillator radiation

DATA

- Power output 1 Watt
Frequency range 118 to 135 MC
Power input 75 Watts, 115-130 Volts, 60-440 Cycles
Dimensions 10" high by 7" deep by 9" deep

Federal Telephone and Radio Corporation

In Canada: Federal Radio Manufacturing Company, Ltd., Montreal.
Export Representatives: International Radio Sales Corp., 47 Street St., N. Y.



100 Orchard Road
Glenview, New Jersey

AVIATION, March, 1947

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BOEING STRATOCRUISER
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COAST TO COAST and
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TOOLS**

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STANDARD THE
ALBERTSON & CO., INC.



WORLD OVER
SIOUX CITY, IOWA, U. S. A.

AVIATION, March, 1947

A black and white photograph of a man in a white lab coat working with a large piece of industrial machinery, likely a lathe. He is focused on his work, and the machine is complex with various gears and components. The image is framed by a dark border.

Having a length of 40 ft, 18 in., depth of 28 ft, 3 in., and width of 9 ft, 4 in. and affording a floor space of 890 sq. ft. are "Main-T", 84-aluminum steel motorized, T-shaped boats. The boats

4.0 Motors up to 1/10 hp can be directly connected, motors from 1/10 to 1/5 hp are magnetic reversing starter. Larger units can be so connected that a single starter control operates all three units. Power requirements are 120v., 60 cycles, 4.0



Sanitary Control Salt (SANTICURE-SALT) is developed by Bantley Laboratories, New York City. "Santicure-Salt" is a sanitary preservative control that will provide life of a number of distant years according to selling of cooked tissue matter. It can be used with freshwater or mineral hot waters and is stored

snapped in position for weather protection. A two-step drain provides combining action to reduce wind as well as strong lock for parking. Safety restraints are installed on each side. Unit is 5 ft. wide, 6 ft. long, and 2 ft. 8 in. high.

Pallet Lift Truck <http://www.epco.com>
Offering new design construction, and operational features, size-500 capacity hand pallet lift truck is offered by Epco-Raymond Corp., Orange, N.Y. All working parts are reinforced. Frame is made of alloy steel (ground and



low sections, Aluminac alloy is used for wheels and other non-structural parts. Maker says two men can load units from ground level into highway trucks. Klevston is assembled through low ramp length of stroke being optional with operator. Lowering is accomplished by pushing foot pedal forward. Pump is equipped with cast valve to prevent cavitation.

Radio Switch Having a constant pressure of 2½ lb and measuring ½ in dia and 12 30 in in depth, new Series 3000 radio switch, developed by Grayhill, Chicago, can be



REFERENCES

used to straighten and correct combinations up to 5 amp., breaking up to 5 amp. at 110v. Providing 360 deg. rotation in either direction, switch can be moved from one position to another by turning through less number of positions. It is available in both standard and non-shorting types, and shunts for either knob or screw adjustments are provided.

Filter Algorithms by Robert J. Schmitt
Developed for wartime applications in eliminating radio interference from sensors, antennas, and other electronic equipment, and available in values up to 970 mF, new network filter capacitors

claimed to be capable of continuous use at 200°C up to 100 amp with line voltages up to 250V. s.c. have been released for general use by Westinghouse Corp., New York City. Westinghouse stated that size furnished in corrosion-resistant metal housing.

Control Rod Movement—Designed to speed up removal and installation of absorber power plants and assemblies through quick disconnection of control rods and replacement at full length and to operate under a 2000-continuous starting load and a 300-lb operating load, new control rod disconnect unit is made for and distributed by **Waltham, Aircraft Service, Plainfield, N. J.** 201-261-4400. See advertisement, page 10.

powder. Green wafers of each unit have been accepted for installation on strike planes by C&A, has passed tests by Ray, and has been used in control assemblies at Newport Airbase and Thundersley, Farnborough Army Helicopter, and Ketter Belknap.

Soldering Attachment 9

Adding double duty for any semi-automatic welding torches, new soldering attachment adds 1 1/2" over end of any standard welding torch tip. It is announced by Gess Products, Inc., Chicago. It is used with acetylene flame

and provides a flame for both soldering, brazing, silver soldering, and heating jobs. Two tips are furnished with M1, one for light duty and one for heavy soldering.

Abe-Corbin, Cummings 19

Incorporating aluminum alloy cam-primer heads and manifolds to obtain cooler compression operation and freedom from valve cushioning were two of the features.

Super Compressor Co.
Korel, China, introduces five models of 60, 100, 150, 200, and 250-cfm capacity air compressors of V-type design, except 250 cfm model which is of "W" construction with four low pressure and two high pressure cylinders. Units operate at relatively slow piston speeds through use of short piston strokes (1 1/2 in. for 60 and 100-cfm models, 4 in. for 150, 200, and 250 cfm units). Other features include crosshatch, resulting in heavy duty long-life wet wall bearings, full force dead forward, and individual air passages for each low pressure cylinder. All mounted features in a compact, rugged

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ONE OR TWENTY
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SAFE PRIVACY



DOOR OPENING—38' 10" WIDE x 9' 4" HIGH—ACTUAL CLEARANCE

BUTLER BUILT RADIAL HANGAR

Up they go, on wheels and more of the smartly designed airplanes and airplanes, to give airplanes the finest protection—against fire and the elements—against the inconvenience and hazards of handling in and out of public garage type hangars. Yes, Butler Radial Hangars, with the overhead type doors (single and multiple units) are rolling off the production lines at a faster pace.

Radicals are disappearing. Come Spring clean-up time on the airports, reasonably priced delivery of Butler Radial Hangars can be expected—growing, of course, no further delays in steel delivery developments.

But remember! If a substantial part of the orders we couldn't accept last year are re-ordered another backlog can quickly build up. So, if your spring airport clean-up or build-up calls for hangars, put your bid in now for the class of the airfield—Butler Radial Hangars. The same sound advice applies also to Butler Built Administration Buildings.

BUTLER BUILT CONVERTIBLE

Also in production, the Trans-Clear, rigid frame hangar with clear span of 17' 6", clear height of 12'. Top work for storage of small planes. Convertible later for repair or shop.

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Send complete information on ☐ Butler Hangar ☐ Admin-
istrative Building ☐ Convertible Trans-Clear Hangar.

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AVIATION, March, 1947

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Above are shown six Firestone Aircraft Dealer Stores that are typical of hundreds of dealers in every section of the United States. If you are interested in expanding your airport business, in making more sales contacts, in earning greater income, write, wire, or phone Firestone at Akron, Ohio, for more complete details on the Firestone Aircraft Franchise.

Open to the public every Monday morning.



GREATER MARGIN OF POWER FOR AIRLINE OPERATION

*With New 2500 Horsepower
Wright CYCLONE 18BD*



THE WRIGHT AERONAUTICAL CORPORATION announces a new, post-war commercial aircraft engine, the 2500 horsepower CYCLONE 18BD as the next step in the development of "Power for Air Progress."

This new model, now in production for the new Lockheed Constellation, incorporates many advancements to provide greater power and reliability in airline operation.

The increase in horsepower to 2500 makes the CYCLONE 18BD the most powerful 18 cylinder engine in the world. Among its many new design features are a *Cyclinspector system*—the direct injection of fuel into each cylinder; *low tension ignition* for improved performance at altitude; *piston oil jets* for prolonged piston and ring life; *forged aluminum cylinder heads* with differential flexing for greater cylinder strength and improved cooling; and *automatic spark advance* for cruising economy.

Although it is a direct descendant of the earlier CYCLONE 18 engines that have broken 98 world records for long distance, altitude with load, and speed with load, the CYCLONE 18BD is the newest model specifically engineered by Wright for commercial transport.

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AVIATION, March, 1947



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AVIATION, March, 1947

MID-CONTINENT
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When
you're glad
you have a
Snap-on



...installing check valve on the hand hydraulic pump with a Snap-on — Blue-Point BOXOCKET

Snap-on's Blue-Point Boxockets are safety tools with the additional advantages of powerful leverage and extra strength. They completely encircle the nut on all six corners... and because of their double bracing, they need only half the space of an end wrench when handle movement is limited. In addition, Snap-on — Blue-Point Boxockets give you one important safety feature... they cannot slip off at spread on the nut... the handles are angled to give clearance from obstructions and prevent shakedown backlashes. Complete range of sizes from 7/8" to 3 1/2".

Boxockets are only a part of Snap-on's complete line of quality tools for aviation maintenance available through Snap-on's nationwide, direct-to-user tool service. "Ask

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AVIATION, March, 1947



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all conditions of sea conditions.
It does not oscillate, swing or
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AVIATION, March, 1947

To say the least . . . *we were flabbergasted!*

..... we thought **EVERYBODY** knew we furnish
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We're inclined to believe this man is a rare exception. But just to be on the safe side—and in case YOU missed our story in the past—we're going to repeat what we've been telling steel users year after year. Namely—

"Carnegie-Illinois is prepared to furnish **construction alloy steels in ALL forms.** Not only in the usual bars and billets but in strip, sheets, plates, sketch plates, structural sections, coiled bars, spring flats, special sections

and in large rolled and forged blooms and forging ingots as well—either in electric furnace or open hearth steel."

Carnegie-Illinois can produce these different forms in any alloy composition, as regular quality steel up to the highest quality requirements—Aircraft Quality, Bearing Quality, Rifle Barrel and Gun Quality, and any other special quality.

These different alloy forms, grades or qualities are produced in most cases in both our Pittsburgh and Chicago mills. So, whether you're located in the East or West, we have the producing and finishing equipment to meet all specification demands and are able to take care of your Alloy Steel requirements completely.

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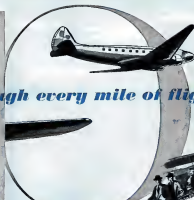
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AVIATION, March, 1947

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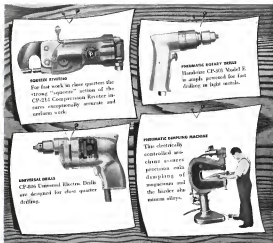
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AVIATION, March, 1947

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We are proud to present many of the air lines that use **BB** ceramic-insulated aviation spark plugs on their passenger and cargo planes. In every part of the globe, under every operating condition, **BB** plugs demonstrate their dependability, unexcelled performance and economy.

From the Arctic, where temperatures lower than fifty degrees below zero are encountered to the Tropics where heat and high humidity prevail, engineers and maintenance supervisors highly praise **BB** spark plugs. Reports of service life extended, of overhaul costs cut more than 40%, of 200,000 miles or 2,000 hours of flying averaged per **BB** plug, are examples

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BB has been serving aviation for thirty years. As new frontiers in aircraft power plants are reached, our research and development continue to provide the industry with the best spark plugs available.

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*is the nose wheel
for tricycle airplanes*

This new nose wheel strut weighs only 12½ pounds and can be used on light tricycle-type planes up to 3,000 pounds gross. Fixed or steerable installations. Retractable or non-retractable.

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THE WORLD'S FINEST AMPHIBIAN . . . TAKES YOU OUT OF THE TRAVEL RUT

LUXURY . . . For greater relaxation . . . less strain.

MODERN . . . Adds productive time in a progressive age.

SAFE . . . The combined feature of land and water operation—Twin engines—Tricycle landing gear—Licensed for 8 to 10 passengers by CAA in scheduled Air Transport category.

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Yes, it's a business airplane, from its prop cone to the trailing edges of its butterfly tail. And into it, Bonch has packed the performance that Bonch is famous for. It's Alcoa Aluminum from prop cone to tail, too, and we're proud that in the choice of alloys, the design, the production details, our 59 years of flight-tested know-how were able to provide Bonch with something more than metal alone. ALUMINUM COMPANY OF AMERICA, 2182 Gulf Building, Pittsburgh 19, Pennsylvania. Sales offices in principal cities.

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SENSENICH BROTHERS

ADJACENT TO LANCASTER MUNICIPAL AIRPORT, LANCASTER, PA., U.S.A.

West Coast Branch: GILLESPIE, CALIF.

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All hub bolts for ground adjustable propellers and two shells or overridable pitch propellers are made of aircraft grade aluminum. Square alloy steel. Individual blades are constructed from three different type blocks:

- The standard block using the type 1 blockhouse with the glue base parallel to the chord line.
- The block using 3/4" vertical has a blockhouse with the glue base at right angles to the chord line.
- The block constructed of laminated 3/4" or 1/2" square or half round with the glue base parallel to the chord line.

All blades have a steel ferrule ground on the blade root, retained by lag screw type block attachment screws. Two type fasteners are used on blades.

- A standard rear type propeller assembly with metal typing secured by screws and rivets.
- A blade secured with a glass fiber using either cement based metal typing or phenolic ground metal leading edge which is coated into the ferrule and does not run any screws or rivets.



MODEL 2-STORE Island. Three-blade ground to chord line. Range type mounting. Blade constructed of 3/4" blockhouse construction with glass fiber base.

MODEL 4-POLAR Gulf. Two-blade ground to chord line. Range type mounting. Blade constructed of laminated veneer, over-molded typing, two shell ferrule.

MODEL 3-SPICE Gulf. Two-blade hydroplaned polished centrifugal pitch propeller. Range type mounting. Blade constructed of laminated veneer, over-molded typing, two shell ferrule.



All fixed pitch wood type propellers are constructed of aircraft birch or maple laminations bonded together by a moisture proof phenolic resin glue with the glue base running parallel to the chord line. The leading edges are protected against abrasion by metal leading edge strips and cap tips, fastened to the propeller by countersinks and copper rivets. Approximately 12 points of each blade tip to also have rounded and protected by a sturdy fabric or plastic covering glued to the wood.

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MODEL 73E. Fixed pitch wood type propeller



MODEL 73EA. FIBER GUM. Fixed pitch wood type propeller with fabric and metal typing. All fasteners may be purchased either with or without fabric and metal typing.



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• a **TWO-PIECE**,
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The Adel **HALF CO** SPHERICAL-CONTACT BEARING consists of two inseparable parts: a hardened, highly-polished, precision-ground steel ball around which a hard bronze outer race is formed.

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HALF CO SPHERICAL-CONTACT BEARINGS are manufactured by Adel Precision Products Corp., under various licenses, in conformity with U.S. and foreign patent pending.

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Federal manufactured balls are "speed conditioned," too. All are uniformly spherical within .000025", and do not vary in diameter more than .00002" in any bearing. Selective assembly of balls and race rings preclude any Federal Bearing from being too tight or too loose.

Every fourth operator is an Inspector at Federal. They see to it that higher speeds are "washed" into every Federal Ball Bearing package along with quiet-running, longer life and extra capacity for the heaviest loads.

Bear this in mind whenever tolerances are tight and specify Federal Ball Bearings . . . in any range or size.

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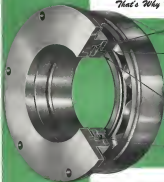


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You cannot, of course, avoid heavy, seat-stretching adults... or kids who use seats for dorms... or even little "cut-and-gift" sessions. But you CAN keep them from causing you unnecessary expense if your seats are covered with that Lumite fabric that cannot wear out... cannot lag or "sag"... and cannot stain! Lower your maintenance and cleaning costs by specifying Lumite fabric. For still other advantages... read below!

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COCKPIT
PRESSURE
REGULATOR

AIR ENTERS
PRESSURIZED
COCKPIT

COMPRESSED AIR FLIES FROM
JET ENGINES AT 450° F.

COOLANT
AIR



REFRIGERATION
UNIT

Compound of ammonia for
cooling and heat exchanger
COOL AIR TO 32° F.



FLOW CONTROL
VALVE

Regulates cabin temperature
by controlling air flow through
Refrigeration Unit.

One System Provides Complete, Automatic Control of Cockpit Pressure and Temperature

Air flows around the fuselage of a jet medium bomber boom cockpit temperatures as high as 450° F. This heat must be removed by introduction of cold air—but all air for the pressurized cockpit comes from the jet engines at 450° F. Result—a rough cooling problem.

Most designers solve this problem with an AiResearch "Cabin Comfort" system, which provides both temperature control and pressurization. Key to "Cabin Comfort" is remark-

able cooling efficiency is the revolutionary AiResearch expansion turbine. In the installation pictured above, a 10-speed turbine, operating at 48,000 r.p.m., cools air 135° at 20 pounds surface per square inch.

AiResearch "Cabin Comfort" equipment is being furnished for the service planes of Douglas, Lockheed, Consolidated, Vultee, Boeing, North American, Republic and Northrop.

AiResearch leadership is based on seven years of pioneering research and production. Call upon this unique background to help solve your problems in aircraft air control. AiResearch Manufacturing Company, Los Angeles 43, Calif.



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3725 FIRST AVENUE S. • WICHITA, KANSAS: AIR SAFETY DEVICES

AVIATION, March, 1947

Two Sides

to the Picture

PRECISION GEAR DIVISION

"A-G" Gears, engineered and produced in the Precision Gear Division of Foote Bros., offer manufacturers new possibilities in the field of power transmission.

Their application holds the solution to many problems where conditions demand extremely high speeds—where every ounce of excess weight must be eliminated—where utmost efficiency is required.

The Precision Gear Division also has complete research, metallurgical, engineering and manufacturing facilities to produce Power Units and Actuators, which provide control from a remote point, within an existing drive cycle. These were custom built and answering, as evidenced if the full benefits of "A-G" Gears is to be realized. Originally developed for airplanes, Power Units and Actuators are also applicable on industrial or construction equipment where better control is required.

INDUSTRIAL GEAR DIVISION

Nearly a century of experience is back of the power transmission equipment produced by the Industrial Gear Division of Foote Bros. This Division offers a complete line of worm gear reducers and helical parallel shaft reducers in a wide range of ratios and sizes.

Many manufacturers also look to Foote Bros. to supply their needs for worm, helical, spur and bevel gears, completely manufactured from the original design to the finished gear. Sizes range from 16 D.P. up.

Foote Bros. gear cutting capacities include equipment capable of producing gear as gears up to twenty feet in diameter for air and steam turbines and other large applications.

Still another phase of this company's operations is the construction of heavy machinery for locks, dams and bridges as well as special machinery built to specification.

Regardless of what your requirement is in the field of power transmission equipment may be, Foote Bros. will be glad to discuss the problem with you.



FOOTE BROS.

Better Power Transmission Through Better Design

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AVIATION, March, 1947

47

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That can be done — safely — if the machine is equipped with New Departure ball bearings.

They operate with less friction, less wear, than any other type of bearing. They permit higher speeds, faster production. They hold machine parts precisely in place, under every kind of load. They assure unchanging accuracy, and uniformly better products. Write for booklet, "Why Anti-Friction Bearings."

Nothing rolls like a ball....

NEW DEPARTURE forged steel BALL BEARINGS

6 VITAL ADVANTAGES

- Higher speeds
- Lower maintenance costs
- Greater economy
- Every kind of load
- Simplified design
- Less friction...less wear

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... for authoritative answers to today's Aluminum problems

What is your answer to these questions on aluminum?

If you work with aluminum or its alloys, some of these problems are familiar to you — some you may have to solve in the future.

There are just a few of the hundreds of questions answered in the Reynolds Library of aluminum and aluminum alloys. Prepared by the technical staff of Reynolds Metal Company, these aids are accurate, up-to-the-minute, ready with the right information at the right time.

If you don't have all of these aids in your reference file, simply fill out the coupon below, and mail with your check or money order to Reynolds Metal Co., 2536 S. 3rd St., Louisville 1, Ky.

1. QUESTION: What are the two most critical factors in the welding of aluminum?



"Welding Aluminum Alloys" — Drives detailed information on the 11 aluminum welding processes from alloy composition to final thing. Fully illustrated with photographs, charts and tables.

ANSWER: Oxidation, and exposure resistance of aluminum at high temperatures.

2. QUESTION: When drilling a hole in an aluminum alloy, how do you figure the proper allowance?



"Machining Aluminum Alloys" — 224 pages packed with practical up-to-date facts. Right dimensioning charts of easily usable data on tooling, speeds, and feeds for right & relevant types of machining operations.

ANSWER: The formula is Drill diameter ÷ 10 is correct dimension.

3. QUESTION: What are the three main types of marks and wear aluminum alloy?



"How To Treat Aluminum Alloys" — "The What, Why, and How" of the marking and heat treatment of different aluminum alloys and various. Complete with tables, photographs and charts.

ANSWER: Horizontal bulk wear; vertical or oval; fish scales.

4. QUESTION: How many Reynolds alloys are produced in forging steel?



"Aluminum Alloys and Their Products" — Contains 244 pages, 300 tables, 20 photographs of specific facts about aluminum alloys and aluminum and products. Complete information on ordering in your needs.

ANSWER: Eighty—HS, 77S, 98S, 33S, 33AS, 33T, 33AL.

5. QUESTION: How quickly can I find out about the properties of aluminum alloy?



"Alloy Selector" — Just one simple strategy gives you mechanical, physical, chemical, corrosion, physical, mechanical, thermal, and oxidation resistance of 11 aluminum alloys.

ANSWER: In 2 minutes with Reynolds Alloy Selector.

6. QUESTION: How can I ever get an extending weight?



"Magna Weight Calculator" — Simple — accurate — fast. Calculates the weights of standard metal components and large shapes and needed in various forms (sheet, rod, etc.). Range—from 0.006 lbs. to 5,000 lbs.

ANSWER: Use the Reynolds Magna Calculator.

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- ☐ "How To Treat Aluminum Alloys" — \$1.00
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Yes, flying is more fun now that you can enjoy the convenience, speed and safety of electric starting... when your generator keeps the battery charged and supplies plenty of current for lights, radio and accessories. Also, Delco-Remy electrical equipment brings you all the efficiency and dependability that have made Delco-Remy such a familiar and favored name wherever wheels turn or propellers spin. Delco-Remy Division, General Motors Corporation.

DELCO-REMY—WHEREVER WHEELS TURN OR PROPELLERS SPIN

AVIATION, March, 1947

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And when you want help with your engineering problems involving Stainless Tubing, make use of Carpenter's 20 years of experience. Ever since the days when Carpenter pioneered the development of Welded Stainless Tubing, we have been putting our know-how to work on problems similar to yours. Drop us a line today.



Mechanical processing facilities made from this tubing have corrosion and heat resistance that keep them on the job.

Corrosion goods like this flashlight can be produced at low cost because of the uniform walls of Carpenter Stainless Tubing.

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STAINLESS TUBING

AVIATION, March, 1947

55

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LORD MR-36-J
DYNAFOCAL SUSPENSION
FOR R-2800-C
ENGINES



The MR-36-J Dynafocal Engine Suspension is LORD'S latest contribution to lighter, faster and more economical aircraft design. Each engine suspension is ten pounds lighter than equivalent previous models, with no sacrifice in strength or performance. The MR-36-J provides the same high degree of vibration isolation, contains the same positive safety features, and delivers the same long service life as other LORD Dynafocals. The same LORD upon an engine suspension is your

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No Spurious Responses

High sensitivity, signal-to-noise ratio, and rejection of spurious signals contribute to the superior performance. Use a SIM-2 for each frequency you wish to monitor. You can mount them all in a single cabinet and utilize a single antenna without interaction.

Let us send you an illustrated bulletin giving detailed specifications of the new receiver.

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COLLINS RADIO COMPANY, Cedar Rapids, Iowa

11 W. 42nd Street, New York 18, N. Y.

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American Reeve panel bodies weigh 2000 pounds in heavy magnesium alloy as opposed to 6000 pounds in steel. Built by Reeve and Body Company, Piquette, Pa.



Reeve built by Purity Baking Company weighs only 2000 pounds in magnesium alloy, compared to 6000 pounds in steel.



HOW FLEET OPERATORS CUT DEADLOAD, INCREASE PAYLOAD, WITH REVERE MAGNESIUM

LIGHT weight truck bodies are no longer something to speculate about... they are reality now to cut loadage costs for fleet operators everywhere. Proof of this comes from fleet operators themselves, a number of whom have equipped their trucks with panel bodies built of Revere magnesium alloy.

Their experience, in varying types of service, has been that the saving in body weight is so large that it can be used for substantially greater payload, or for marked savings in expenses and maintenance costs. American Stone Company in Philadelphia reports that its bodies of Revere magnesium save 1500 pounds heavier than similar bodies of steel, that such units cost now half 1500 pounds more payload. The Purity Baking Company of Charlottesville, Va., saves 1200 pounds per body and makes an saving in the form of reduced gasoline consumption, lowered wear and tear on tires and chassis, and other like maintenance costs. Other operators make similar reports.

This remarkable development was made possible through the design, by Revere engineers, of standard magnesium alloy shapes which enable any body builder to produce bodies of magne-

sium as easily and quickly as with steel. Without previous experience in working with magnesium, several prominent bodybuilders have been able to build their first magnesium body at approximately the same cost as that of former steel bodies. The necessary magnesium alloy shapes and sheet are available from Revere stock.

For full details, get in touch with the nearest Revere office. A Revere Technical Advisor will gladly consult with you on this and other applications of magnesium to your business.

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Letters to Engineering Department of the Mutual Network
every Monday evening, 9 to 9:30 p.m., EST.

THE AVIATION NEWS

Re-Accident Agency—Everyone wanted to get into the act and did, till the airline accident toll became almost unbearable. The accident was expected, with more flying and winter weather. But the price, ignoring the new high in safety, started the avalanche with black headlines as air crashes and warnings on the regular toll of highways and seas.

Air Force and Navy are seen, forgetting that the airlines taught them to fly schedule, publicized their respective GCA shortcomings. CAA and the airlines continued with a demonstration of Sperry's handling of the job plot to get automatic approaches on the local ground. ILS, Air Line Pilots and Air Transport Union called for independent safety board—each considerable looking in Congress. Senate Interstate & Foreign Commerce Committee moved to ask Congress for \$15,000,000 extra for CCA, ILS, and high accuracy approach and runway lights.

Committees in House and Senate studied airline safety shortcomings, while debate ground here. Sen Owen Brewster (R, Me) produced records showing unexcused late accidents were then pictured over by CAB Chairman Levine. ATA sought to deny certification, carriers the right to use "ways" and "bars" in their advertising.

Because most accidents occur during landing procedures, the toll centers mainly around CCA and ILS, with expanded claims for both. Important view is that both present excellent results and should be tried till use is demonstrated on both as combined in past use. Many responsible people agree their procedures aimed at making safety by whatever means, for both civil and military aviation.

Looks as if CAA and the airlines have lost much credit due for excellent but slow work on ILS by testing it too long, while they might have got up to date with CCA, wherever radar ground lights, and pilot training. CAA's "no hands" excuse doesn't satisfy the critics, a loud call for airline agencies. CAA expected more have learned the trick, funds on an A-1 and airline pilots when they turn a stiff neck to police, are seeking young passengers military men to curdle them.

Taxes On The Airways—If trouble develops character the airlines will grow slower. While aviation transport, and some city governments, are happy to make them pay even for use of national facilities, CAA proposes to assess them for use of the airspace. A federal tax of 1½¢ per gallon, existing taxes on gas, is contemplated, also a tax of 25¢ on passenger revenues and 1½¢ on cargo, and a 10½¢ reduction on government traffic. At best these would yield only a third of the \$46,000,000 annual cost of airway operations. The plan could not be sustained till the position of multiple trustees a doubt with.

Airfreight Losses—Ground—Inadequate airfreight carriers, who last spring were flying several times the volume of scheduled lines, are sliding back slowly. In December the certified lines totalled half as much as the freebie freight. Scheduled lines are progressing toward service between all certified points and, by increasing with airline carriers between most trunk centers in the U.S. Representatives of Air Corp. Inc., the airline's grand service co-op, will provide pickup and delivery, collection

of shipping charges, preparation of shipping documents, etc. But the schedule will have the possibility that CAB will outdistance some freight routes.

Time and justice of the air transport boom are giving into hands of the scheduled lines as they battle with the non-scheduled. At least a dozen of the latter, cited by CAB but left for scheduling agencies in violation of law, have gone bankrupt or revised their practices. Only one, American Air Express & Import, has reformed because as a result of CAB issue and court order, but CAB will not concern itself. Some are willing to continue in regulations to avoid federal proceedings. Non-scheduled with route applications pending their chance to compete, because violation would pay for their chance of success. A good long term game is that air transport will be re-scheduled, for purposes of regulation, in terms of passengers and cargo, rather than scheduled and non-scheduled—with allowance for charter and taxi.

One for All—Duplication of airline terminal facilities led to formation of Airlines Technical Corp., which will handle tailoring, control system, baggage, repairs, mail, cargo, maintenance, dispatching—for all. Revere and Continental, not working for ATC in past year, have started their own joint venture in six states. They figure it will save them \$30,000 a year.

A "good deal" on some global system experts in the past operations being arranged by TWA and Northwest for about May 1. TWA will soon return from Revere to Canada and Mexico. NWA's twin F-4s move Revere to Anchorage, Alaska, will soon reach Miami and Swag. The two lines will coordinate traffic, schedules, terminal facilities, equipment. As airlines threaten airlines to circle the globe, there'll be some such lookups.

Collection in Quotes—Many give as in powerful Navy opposition and agreed to a "corroboration" plan which leaves the way open for continued unexcused battle. Some hold that it accomplishes little more in the way of pilot procurement than was already under way. A bill, agreed to by both sides, now before Congress, does provide for a reformed Air Force, which will have its own airlines, prob-

REVERE TRUCK OF THE YEAR

Revere's truck is awarded in the annual selection of the nation's leading trucking companies. Revere's truck is selected as the best in the industry for its outstanding performance in the field of heavy-duty trucking. Revere's truck is selected as the best in the industry for its outstanding performance in the field of heavy-duty trucking. Revere's truck is selected as the best in the industry for its outstanding performance in the field of heavy-duty trucking.



GET THE FACTS

ON *American's* UNIVERSAL BROACHING MACHINE

American
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MACHINE

TYPE-T
3-WAY
BROACHING
MACHINE

CIRCULAR
NUMBER 120



AMERICAN BROACH & MACHINE COMPANY
UNIVERSAL MACHINES FOR CUTTING
BROACHING MACHINES
BROACHING TOOLS
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BEST
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BROACHING MACHINES
PRESSES
BROACHING TOOLS
SPECIAL MACHINERY



A NEW CIRCULAR, just off the press, tells the story of American's highly flexible 3-way Broaching Machine. Shown in detail are the various kinds of work it performs, including surface broaching, and push down or pull down internal broaching. American's 3-way Vertical Broaching Machines combine the advantages of fast, easy operation with the ability to maintain a high rate of accurate production. A letter or post card will bring the new circular by return mail. Write today. Ask for Circular Number 120.

ably bias. Beyond that, the bill merely sets up a Secretary of National Defense, with Cabinet rank, under whose supervision the three services can go on with their conflicts, even carrying them to the President. But say Congressmen realize what's happened, and they may demand a real reorganization of U. S. military power.

The Lightplane Picture—Shipments of 14 leading light plane builders totaled \$1,590, valued at \$58,000,000 in 1946. Aircraft Industries Association reported December shipments totaled 1,851, against 2,995 in November, a decrease of 31.9, two companies not reporting. Building of orders Nov. 33 was 31,461, valued at \$1,147,667,500, a decrease of 23.9 in numbers (over 40,562 in October). Trend is away from 2 place to 3- and 4-place machines. The lightplane industry cannot be viewed dully unless not until automatic drop to near the present level. So far, the long pull is all right. But hope for a real volume industry is not until personal planes have improved ability.

A proclamation by the President lifts the ban on one engine aircraft of lightplanes. Still restricted, however, is foreign sale of machines in excess of 35,000 lb., including Army and Navy to prevent better planes, comparable to military models, from going to foreign lands. Of course, the Maritime Control Board (TWA, Navy, Commerce, and State Departments) can license sales to friendly governments.

Compulsory Billing—Aviation bills fall over the new Republican Congress like paper on a Broadway parade. Here's what would happen if they all passed, which they won't. Multiple taxation of an engine would be stopped. A subcommittee air policy board, like the Morrow Board, would be set up. A system of air routes would be spread over the nation. Strategy lines could go into air transport business. A \$12,000,000 air industry would be created at Annapolis. You'd need parent post by air, and buy no mail postal cards. Air taxis (excepting less than ten passengers) would be exempt from transportation tax. There are the new ones, a dozen or 20 old ones are still there.

Shed—Greece Landing, well-known, announced to Greece, ahead of others of Palm Beach, Fla., to complete to Greece, Douglas, and Lockheed about the same time they make. Manufacturers the money over in blocking construction of domestic airports, making planes to stay higher than CAA maximum, or long for growing of particularly useful lightplane models. There's a lot of fuel talk about quiet engines and propellers, but not much action.

Canadian Notes—Sterling to Canadian aviation industry now government's role of surface-based Canadian Ltd. and Montreal, to Electric Boat Co. of New York, with 15 per cent, emphasis on physical assets. This is accorded by government aircraft plant to be sold to private industry, after being Victory Aircraft, Toronto, sold on 50-50 basis to Hawker-Siddeley ventures in England. Half of direction in new company operating Canadian air. Canadian, and president is H. Oliver Wink, formerly with Boeing at Seattle. Under Douglas loan agreement, company makes DC-4's for TCA, BOAC, and for export.

WORLDATA

GENERAL REVIEW—170 scheduled common carrier airlines have school training over \$10,000,000 scheduled students, and after better five new school by air, creating 12 million personnel per week. This is not counting data on USAR, which has been ordered to create a location in its air services, but it is more to have 70,000 in total. Most airlines doing it is a new increase of foreign routes. Radio schools work up 10%



BELL COPTER MOUNTS REMARK "DUPLEX"

Equipped a private landing ahead of rotor for carrying passengers and equipment, a Bell Model 47 takes off on a preliminary test carrying Miss T. Conley (left) w.p. of Landing Rotor Air Corporation, Inc., who brought her Bell to good speed of current design in U.S., Canada, Mexico, and Panama this year. Mr. Conley's son, who has started out in rotary wing out of Bell's school, will do nothing on a helicopter.

compared with 25% for U.S. flag airlines, and scheduled average 46% at present over 34%. BOAC had begun net—over \$4,000 an—while American lines operated highest frequency, better than 11 round-trips per week over its routes system.

INGLAND—British manufacturers have order on hand for 1,800 aircraft of which one for export. Included are 135 Avrocar Canada, 70 Bristol Waybears, 251 Dornier Doers, 347 Folland Fantic, 16 Todor HFA, and 160 Vickers Vikings. Increase of government loaned BOAC to ease up on its contribution of Todor 1 series. However, further fight time show decreased utility of Todor 1 at takeoff and landing, as well as fuel status at cruise speeds, also high fuel consumption. So complete cancellation a decisive step forward. Kennedy declined Mergers with 85 per cent, with third, suspension is allowed to have lower specific fuel consumption—14 lb./hour/HP. That provides 6,000 lb. thrust, single 4,500 lb., and has overall length of 15 ft.

CHINA—Singer's Longchuan report is being completely rebuilt to provide at least one 4,000-hp engine. The Chinese national operators by TWA and Northwest. New tailings, engines, and communication building are also on program, which will cost \$20 million expenditure.

AUSTRALIA—Trend of Australian airlines to purchase U.S. aircraft is continuing, despite strong British efforts. Trans Australia recently ordered four General 340s, and Queen of the South, making last time in this company's history that U.S. plane will be used. Both ANA and TAA are now DC-4s and DC-6s, while latter also three Lockheed of Queen Airways, Auster, and Bristle Airways. DH Dewey are reported to replace DH Eagles, but indications are that the larger and faster craft will be American, especially following local results with TWA and Transamerica, and now had during at Todor.

SOUTH AFRICA—For one in the national airline, SAA has placed order for eight Viking. These will replace DC-4s. Meanwhile, so-called emergency DC-4s acquired in England has been granted another extension, continuing their flight until July.

ARGENTINA—Government has placed orders in U.S. for 15 Sikorsky helicopters, to be delivered later in 1947. Cash will be used for newly formed air force units of Argentine Army.

MEXICO—LAMEA, United Air Lines' subsidiary, announced additional plans for 1947, including installation of complete airline service along its major routes. Food fighting of last month airports, and new construction work. New program calls for additional investment of \$7 million for building new service along Casapuy plans to be using Martin 3-0 on main routes in '48.



HARNESSES HEAT in the WORLD'S FASTEST ENGINES..



DEEP TO APPLY The J-M Thermoflex insulation blanket is being applied to an engine case.

CAREFUL REMOVAL is needed for engine inspection. Blankets complete seal, and engine remains cool.



COMPOSITE BLANKET consists of fibrous blanket with non-slag glass, aluminum foil, aluminum foil, and aluminum foil.

J-M Thermoflex Insulation Blanket

THE NEW BLANKET INSULATION was designed especially for insulating the turbine engine, engine cases and tail pipes of jet-propelled aircraft. It does a two-way job of controlling heat:

1. It improves thermal efficiency.
2. It protects external structural members from the intense heat.

The complete Thermoflex blanket... shown at the left... consists of these four parts: (1) An innermost laminated gauze, (2) An asbestos asbestos fiber mat usually $\frac{1}{4}$ " to $\frac{3}{8}$ " thick, (3) An aluminum foil sheet to serve as a protective diaphragm for sealing the blanket from gas or oil penetration, (4) An aluminum screen cloth with blind screen cloth ends provided with hooks for securely lacing the blanket in place.

This construction gives the J-M Thermoflex Insulation Blanket many important advantages. It is flexible... easily applied... light weight... has low conductivity... is highly heat-resistant... and can be supplied with custom when required.

For further information write to Johns-Manville, Box 280, New York 16, N. Y.



**J-M PRODUCTS
FOR THE AVIATION INDUSTRY**

Packings and Gaskets • Prillins Materials
Insulations • Asbestos Textiles • Synthetic Gaskets
Thermal Pipe • Industrial Building Materials

Johns-Manville

What should be the progress... what will be the progress... of our industry in this second postwar year? Here, 16 prominent leaders—leading foremost firms making military, commercial, and personal aircraft, engines, and instruments—give a broadly encompassing, yet necessarily sober

OUTLOOK FOR '47



Henry Woodhead, Vice President, Consolidated Vultures Aircraft Corp.—It is plainly evident that we possess in this nation's best guarantee of peace in the years to come. We should not again allow the question of our strength or weakness in the air to become a matter for settlement by combat.

To ensure any kind of our ability to defend ourselves in the air we need require that we build and maintain thousands and thousands of airplanes of great expense, but it does require that we search an adequate research program with enough production of our best study developed planes to do three things: 1. Maintain an operational force adequate to meet any unexpected attack; 2. provide for the training of an adequate reserve force of air and ground crews; and 3. give the aircraft companies adequate minimum orders for particular models to permit the development of the latest tools and jigs that will be needed if an emergency demands a quick expansion of production.



Walter H. Bush, Vice President, Bush Aircraft Corp.—First, I must declare my ability a program. And it should be clearly understood that I express merely personal opinion in the following. It now appears that quite a few new and improved planes will be available in the public and private during 1947. The greatly increased utility of these planes over the utility of the previous type models makes a good market for these aircraft.

The market for small five plane personal planes already has become very solid. This is partly due to unusual conditions and partly due to a definite buyers' preference for certain types. The companies with the most advanced designs are selling such planes as fast as they can make them, whereas other companies are finding difficulties in operating with greatly reduced schedules.

After delays due to strikes and other dissensions, postwar four-plane planes for business purposes are just coming on the market. There are very serious in ability in anything previously offered. They are expected to make significant changes in the operations of many businesses, and I believe that the market for these is virtually untapped. They particularly will appeal to the businessmen in the small communities who, in fact, have been bypassed by all first class transportation. The low operating cost and high operating speed of such planes place at the disposal of businessmen everywhere first class transportation at a not easily afforded.

The new seven instrument type will operate at lower cost per passenger-mile and offer better schedules. They probably will not be built in sufficient quantities to replace the majority of transports now operating, but they will certainly be an important market potential for the

aircraft manufacturers. As for new military types, many are in design, testing, and prototype stages, and some will emerge in production quantities in '47. Delays in military budgets have delayed some of the planned orders, but I feel it possible that some of these orders will be recommended during the year.

Speaking for Beechcraft, our new four-engine Bonanza will enter volume production early in '47, with a backlog of 1,000 planes now on order. Production will continue on the Model 30 executive transport, and our prototype 30-place short-haul transport should be flying before the first quarter of '47 ends. At present we have a backlog of business approximately 20 million dollars.



Roy W. Vaughan, President, Cessna Wright Corp.—There are no short cuts to successful progress. The starting accomplishment the public needs about today are the first of the new aircraft and development, but as has been every major aircraft development.

We are intensively studying the field of rotor propulsion, piston aircraft, and guided missiles, but this does not mean we believe the products now in production, particularly for commercial transport, are obsolete or likely to become so very quickly. Every bit of progress in the field to significant achievement will come at the price of time, effort, and the investment to accomplish the objectives.

At times the aircraft industry faced such challenging technological problems or more urgently required more wholehearted cooperation of the Government in the advancement of air power and national security. The need was met by Government adoption of a sound air policy and programs for adequate funds for the carrying out of same.

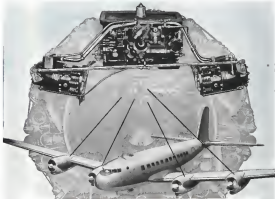


William M. Allen, President, Boeing Airplane Co.—an Transport Division. Despite a temporary slackening of its recent unusual growth, with continue to expand. We all agree that the airlines are not functioning as smoothly as they were before the war, but that is true with most industries. The airlines are handling a much greater volume of business than ever before, and have been confronted with many problems—some of which have delayed immediate solution.

There are a little time and they will surely correct the situation.

The full meaning of air transportation, both for the moving of people and goods, is just now being realized. It is evident that the airplane will play an increasingly prominent role in world commerce and in achieving world unity.

This country appears to be approaching the end of the



Bendix Direct Fuel Injection

CUTS COSTS—ADDS PAYLOAD—ADDS CRUISING RANGE

The Bendix® Fuel Injection System adds as much to comfort, safety, and operating efficiency that it merits the attention of every airline executive.

Engines start more quickly, with less bucking and shorter warm-ups. Each cylinder receives the precise fuel charge, and there is no wasteful combustion. Inside purges carry soot away, thereby reducing fire hazards. Since the fuel is vaporized within the cylinder there is an "injection" of residue-minimal no carbonizer, and consequently no soot from fuel vaporization. Fuel distribution is evenly equalized between

cylinders, permitting longer runtimes and major savings in fuel. Precisely-controlled fuel distribution also means smoother operation, longer engine life, and less wear and vibration to airline passengers. Absolute performance is improved, with more engine power and better acceleration. Engine noise is lowered due to fuel factors are eliminated, because fuel feed is unaffected by gravity or inertia effects in climb, descent or dives.

Performance records, as shown below, make it clear that Bendix development is one of the most important aviation advancements in years.

Bendix Products Division, Bendix Aviation Corporation, South Bend, Ind.

AIRLINED REPORT . . .

... Estimates of fuel saved at 20 R.P.M. per gal.—increased payload of 100 pounds

... Increased cruising speed at 20 R.P.M. per gal.—shorter and safer

... Smoother engine operation, improved engine maintenance cost

... More engine power and smoother, and increased altitude performance



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PRODUCTS
DIVISION

ENGINE OILS AND OIL-CHANGING DEVICES
ENGINE FUEL SYSTEMS
HYDRAULIC PUMPS AND BOMBS
HYDRAULIC EQUIPMENT

MAIL NO. 97-107

infinitely speed, but a tightening-of-helm period should be recognized rather than discouraged. It is high time for all of us to get back to business, to recognize that true prosperity can be achieved only through hard work. We must either bring a halt to the increase in the cost of American products or give way to foreign competition. It is apparent that the great business in product cost will put American industry at a disadvantage. At the same time, we must not reduce the quality of our products.

Bearing across the new year with a backlog of nearly \$20 million dollars in commercial and military orders. Our first postwar Stratoflighter has just been ordered by the AAF, and before the end of the new year, State of its other ship, the Stratocruiser, will be flying the major routes. Orders for the B-24 bomber have increased to more than 70 million dollars.

The company continues to share a large responsibility for AAF research, development, and production. In addition to 18 C-47 Stratoflighters, we have orders for 330 B-40 bombers, first of which will be produced early in the new year. This plane is designed to exceed the B-29 in load, range, and speed as a key plane in the AAF's postwar national defense program. AAF has also given us two other important assignments for the future—a multi-engine, the XP-57, and a defense, guided missile called Orga (ground-to-air pilotless aircraft). Moreover, the company is experimenting with new types of power plants

of volume and cost stability prevent optimistic predictions. Aviation has had a short past but looks to a long future. Its long-range picture is bright, and the industry should not be sold short. (Tommy Weber photo)



E. E. Newell, Gen. Mgr., Allison Div., General Motors Corp.—With military airplanes the world over rendered obsolete by recent developments in aircraft power plants, the U. S. is confronted with the immediate urgent need for an intensive development program embracing the whole field of aircraft power plants and turbo-prop and turbo-prop engines have opened vast new business for the aircraft designer.

But not until there has been a great deal more experience in turbine engines will it be possible to ignore the unenviable possibilities of the tried and proved reciprocating engine.

Accumulation of experience in the aircraft industry is an expensive and time-consuming necessity in the national interest. In 1945 the military services must meet with the realization of long-range development programs. The national security of our country requires that these programs be maintained in 1947 and continued into the pilot production stage where manufacturing and tactical experience, as well as development experience, can be obtained.



Donald W. Douglas, Pres., Douglas Aircraft Co.—I have inspired faith in the future of aviation. The major difficulties, due to world-wide expansion of air travel, are being solved and eliminated. Basically, people everywhere have faith in aviation. Universal support and confidence will grow stronger as service and performance improve.

Here at Douglas, we feel we can best serve the interests of aviation by supplying the services with aircraft during the highest standards of performance, efficiency, and economy of operation. Great strides have been taken as new production, navigation facilities, better airports, and airline service.

True progress in aviation must be based upon sound, steady, and constructive accomplishment. I feel that a realistic and intelligent approach to problems and achievements is necessary today to make a strong aircraft industry a national asset in peace as it was in war.



J. Oetting Ward, Jr., Pres., Russell Engine & Airplane Corp.—New national legislation with expanded titles and appropriations will determine in large measure the industrial outlook for '47. If America is to be an important, confident, and independent nation, it must be able to speak with power. And in this day when power is our power.

The important key to the outlook for the aviation manufacturing industry must be Army and Navy appropriations put to be determined by the new Congress. . . . Aviation's commercial transport industry faces an uncertain period of adjustment and assimilation. Prospects of increased volumes of aircraft and of small are bright spots in the transportation field. . . . Successes in the field of private aircraft are dependent wholly upon increased ability of advanced designs and sufficient volume to permit lower unit cost. Today, factors



L. H. P. Elton, Pres., Lonsdale Aircraft Corp.—From a survey made by our company's nationwide foreign sales organization, it appears that the sales of personal planes—which will be mostly in business organizations, farmers, smokers, flying clubs, flight training schools, and those who fly for pleasure and sport—will again be large in '47.

However, it is now generally realized by leading personal plane manufacturers that real sales effort is necessary. By the nature of such effort, and with the steady improvement in our planes made possible by continuous research, with the construction of many new airports under the national airport program, and with the more than thousands of planes under the G.I. Bill of Rights, we see little reason why our line should not sell more Strimors than we did last year.

We look at 1947 in an optimistic light, believing that the only factor which would pose a serious threat to this standpoint is a change in bank business conditions.



Glenn E. Martin, Pres., Glenn E. Martin Co.—Aviation, aided by accurate research in flight safety and speed, has entered 1947 with bright prospects for continued growth and prosperity. The year may well be the most significant point in the industry's history.

Great strides will be made in commercial aviation this year and the present extremely difficult interim period should be successfully concluded. New postwar transports, such as our twin-engine Martin 2-0-5, will go into service as major engines. Also, steady progress will be made in aircraft development on the basis of proper airports to handle ever-increasing traffic, the development of ground and airborne aids to all weather operations.



Duxmoir Gargoyle

Covering three people sitting side by side seat, Gargoyle has 500 hp Franklin engine and 175 mph top speed. With 140 mph cruising speed, range is 500 mi on 20 gal of fuel. Landing speed is 48 mph and rate of climb 500 fpm. Short-run landing, with a gross weight of 1,500 lb., is 14,000 ft. Weight empty is 1,000 lb. Short-landed, as color shown, wing is straight. Duxmoir stresses its three aluminum alloy ribs with three longways.



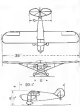
Duxmoir DC

A power-type, compact two-seater, the Duxmoir DC has 500 hp Franklin engine, 175 mph top speed, and has a top speed of 140 mph. It lands at 48 mph, as color shown. Dual shock absorbers with shock absorbers, 20 gal fuel capacity, and top all range on other Duxmoir. Gross weight is 1,500 lb., empty weight 1,000 lb. Short-landed, as color shown, wing is straight. Duxmoir stresses its three aluminum alloy ribs with three longways.



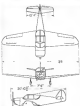
Peak Bee F2B

Shedding two previous models, the Peak Bee F2B is a high-wing, two-seater aircraft. Top speed is 175 mph, and landing speed 48 mph. This 16 ft craft has a gross weight of 1,500 lb. It is a compact design of 800 lb. Rate of climb is 500 fpm, and with 20 gal fuel capacity, range is 500 mi. The open engine and the, and its three longways. Duxmoir stresses its three aluminum alloy ribs with three longways.



Globe Swift GC 58

Designing a cruising speed of 140 mph, the Swift GC 58 has a top speed of 140 mph, and landing speed 48 mph. Top speed is 140 mph, and landing speed 48 mph. This 16 ft craft has a gross weight of 1,500 lb. It is a compact design of 800 lb. Rate of climb is 500 fpm, and with 20 gal fuel capacity, range is 500 mi. The open engine and the, and its three longways. Duxmoir stresses its three aluminum alloy ribs with three longways.



Truempz AA-2

AA-2 has a top speed of 140 mph, and landing speed 48 mph. This 16 ft craft has a gross weight of 1,500 lb. It is a compact design of 800 lb. Rate of climb is 500 fpm, and with 20 gal fuel capacity, range is 500 mi. The open engine and the, and its three longways. Duxmoir stresses its three aluminum alloy ribs with three longways.



Palmfield 34B

Technical version of 34B has a top speed of 140 mph, and landing speed 48 mph. This 16 ft craft has a gross weight of 1,500 lb. It is a compact design of 800 lb. Rate of climb is 500 fpm, and with 20 gal fuel capacity, range is 500 mi. The open engine and the, and its three longways. Duxmoir stresses its three aluminum alloy ribs with three longways.



International Aerobike

Combining features of the Aerobike, the International Aerobike is a high-wing, two-seater aircraft. Top speed is 175 mph, and landing speed 48 mph. This 16 ft craft has a gross weight of 1,500 lb. It is a compact design of 800 lb. Rate of climb is 500 fpm, and with 20 gal fuel capacity, range is 500 mi. The open engine and the, and its three longways. Duxmoir stresses its three aluminum alloy ribs with three longways.



Luscombe Skins 2-B

Skins 2-B has a top speed of 140 mph, and landing speed 48 mph. This 16 ft craft has a gross weight of 1,500 lb. It is a compact design of 800 lb. Rate of climb is 500 fpm, and with 20 gal fuel capacity, range is 500 mi. The open engine and the, and its three longways. Duxmoir stresses its three aluminum alloy ribs with three longways.





Measure: HAD: 015-C

Smooth Skin: retreadable looking grey, with a 125-kg. Continental engine gives this new 60-horsepower personal plane a top speed of 140 mph and a cruising speed of 130 mph. 910-lb. empty, landing speed is 45 mph and climb is 700 fpm. Loaded on 27000-watts of 1475 hp, with 2 passengers and one side-by-side, 50% of baggage, and 50 gal. of fuel, it has 500-mi. range. Empty weight is 1600 lb., and service ceiling 14,000 ft.



Business Strategy

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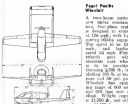
Piper Super-Coolant

[illegible]Figure 10: Dependence of Γ_{eff}

Advanced at low price. Four-phase marker. Flyer boxes (for all metal monometals) will become handy plates. With 100-psi. Control system, creates avg. speed in 100 mph. Top speed 300 mph. and landing speed, with spin, 400 mph. A stage of 400 mph is possible with 40-in. of gas. Landing gear is automatic and gross weight 2,400 lb. "Our 100 mph" makes her a real star and will attract a large, Phosphor plate type.

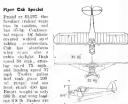
North American
Neylon

An all-metal, European-style, Mustang with the 302V8, with controllable pitch prop., 600 mph, and landing 1600 ft. With 150-gal. Condensed water, maximum speed is 120 mph, and top speed 260 mph. Flaps give 50 mph landing speed. Cruising range is 700 mi, with 50-gal. fuel capacity. Fuel tank is 400 cu. in. and landing gear 200 x 10. Gross weight 2570 lb. with 80 lb. of baggage is 400 cu. ft. of storage can be carried.



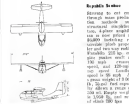
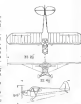
Project Profile
 10/10/2010

A two-room master and office combination, two-phase craft is designed to create at 120 mph, with 100-hp output. Top speed is to be 120 mph, and landing speed 50 mph. Flies through air with electric gun which is to be provided. Grossing 4,500 lb, including 200 lb, of fuel, and 50 gal. gas. Weights are grossing weight of 600 lb, and 100 lbs. net weight of 400 lb. Weights range at 11,500 lb, and net



Plant Cell Special

Frased or BLIND (the forehead) (forehead) starts true to random, and last 40-45% Contingent last region. Of infinite ordered, which are building, or non-building. Only has placeholders when you also enter a right-left. Head round 50 mph, 100 mph, speed 72 mph, and heading speed 72 mph. 72 mph, yellow last last place 200 mph, purple and round which 400 mph. Emphas: weight is only 600 lb, and wing load is 4.8 lb. (Parker et



The world's No. 1 online

Storing to cut cost through mass production methods and structural simplification, 4-place amphibious is now priced at \$44,800 including removable pilot's compartment and two sea radio. Variable 225 hp, engine pushes craft to 130 mph cruising speed, and 128 mph top speed. Landing speed is 55 mph. Gross weight is 3,000 lb. Total fuel capacity allows a range of 200 mi. Empty weight is 1,050 lb, and max of about 180 lbs.





Aero-Flight Streak

Adapting design principles of high-speed section blunted to the Schlichting Aero-Flight offers a craft that reaches at 140 mph. plane, on 40-hp Continental engine. Reaching 170 in ten days, it has top speed of 170 mph, cruising range, fully loaded at 700 mi., and 1,000 ft. climb. Priced at \$9,000, it will have standard speed prop., starter, and two way radio. Two seats loading give it trimmable



English Trojan

Radically simple structure, and ease of handling make it ideal for aerial Trojan extremely maneuvering. Strong structural metal, wire line air ribs, and its ability to be handled about situated in upper and lower identical layers in two short hours. Powered by 40-hp Continental plane reaches at 120 mph, bank of 30 mph. Size 500 sq. ft. single seat is expected to sell for under \$5,000.



Percival

Strongest engine production facilities for its new Personal Steam Division at a former Army plant at Winchester Field near Wichita, Kansas, Percival is now getting development of a new four four piston, low wing design. The prototype of this craft is scheduled to fly early in 1947. Company were low range and high performance are being stressed.



Sandpiper 54-2

Although company has concentrated on production plane, this 2-year amphibian recently received 260 hours. With 140 hp Franklin engine, it has cruising speed of 110 mph, top speed at 120 mph, and landing speed of 30 mph. Construction is all steel, except for fabric wing and wing and airtight plastic wing fabric. And 400 sq. ft. wings is possible with 30-hp. And equally



Hackberry Cowd

This high-wing monoplane costs two miles by rule and reaches at 140 mph, with a top speed of 140 mph. Power plant being optional plane is geared at 63,500 with Franklin 150-hp engine, or 20,420 with Continental engine of same output. At 4,000 weight 1,800 lb., net of climb is 1,200 ft., and arrival ending 13,000 ft. Climbing range is 500 mi., and baggage room 100 ft.



Southern Swindale

Experimentally built and cost down by Southern Aircraft this two-seater has a corkskin wings, tail, and propeller. Powered by 120 hp Franklin engine, it flies at 130 mph cruising speed, and 120 mph top speed. Landing speed is 50 mph and gross weight 1,800 lb. On the ground, inside outside between. Single and double seats. Wing span is only 29 ft. No production is planned.



Corsica Ace

Most little biplane ever for easily found its own is being prepared for some output. It will be under 1,000 lb. Powered by 100-hp Continental, top speed of 120 mph is claimed. The landing speed of 110, and stalling of 40. Unique control system has been developed, eliminating roller bar, and all items, rudders, and elevators are by upper and lower stick as is control by one wheel and column. Wing and power loadings are 11 and 23 lb. sq. ft. respectively.



DR Chipmunk

First craft which is claimed and built for DR's Canadian branch, all metal two-place tandem is slated at about 1,000 lb. With 140-hp 100-hp 100-hp, top speed is 140 mph, cruising 120, and stalling 40 mph. Climb at 1,000 ft. and to be 1,000 ft. Powering and wings are made in a workshop, and fixed landing gear was rubber shock absorber. Craft is said to have official approval for 1,500 ft. because overloads. Landing run over 50 ft. adequate in 500 ft.



Miles Messenger

Design 5-4 under is designed for low speeds and ability to top two. Two-seater, open. With 100-hp 100-hp 100-hp, top speed of 140 mph, cruising 120, and stalling 40 mph. Climb at 1,000 ft. and to be 1,000 ft. Powering and wings are made in a workshop, and fixed landing gear was rubber shock absorber. Craft is said to have official approval for 1,500 ft. because overloads. Landing run over 50 ft. adequate in 500 ft.



Miles Swindale

Landing a new engine stream of Miles Messenger, German-made and is powered by 100-hp 100-hp 100-hp, top speed of 140 mph, cruising 120, and stalling 40 mph. Climb at 1,000 ft. and to be 1,000 ft. Powering and wings are made in a workshop, and fixed landing gear was rubber shock absorber. Craft is said to have official approval for 1,500 ft. because overloads. Landing run over 50 ft. adequate in 500 ft.





Elia 32

Powered by a 250-hp DeSop of 27 hp, this Czech Elia 32 has a top speed of 115 and cruises at 100 mph. It is 30 ft long, 36 ft 10 in. and weighs 1,227 lb. Stall speed is 34 mph, climb 550 fpm, and service ceiling 13,775 ft. Mixture of wooden construction. Wings unstuck, even in tail, to be 1,107 lb., and empty weight 803.5 lb. Wing and power levers are green, to 5.4 and 32.2 ft, respectively. Other colors including stripes in 12.6 ft. Oil wheel is standard.



Elia 42

120-hp, variable, Puller Elia 42 has 30 ft 10 in. long, 36 ft 10 in. wide, and weighs 1,227 lb. Stall speed is 34 mph, climb 550 fpm, and service ceiling 13,775 ft. Mixture of wooden construction. Wings unstuck, even in tail, to be 1,107 lb., and empty weight 803.5 lb. Wing and power levers are green, to 5.4 and 32.2 ft, respectively. Other colors including stripes in 12.6 ft. Oil wheel is standard.



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Elia 42

Low wing, Czech 2-engine is powered by a 50-hp 250-hp DeSop of 27 hp, this Czech Elia 42 has a top speed of 115 and cruises at 100 mph. It is 30 ft long, 36 ft 10 in. and weighs 1,227 lb. Stall speed is 34 mph, climb 550 fpm, and service ceiling 13,775 ft. Mixture of wooden construction. Wings unstuck, even in tail, to be 1,107 lb., and empty weight 803.5 lb. Wing and power levers are green, to 5.4 and 32.2 ft, respectively. Other colors including stripes in 12.6 ft. Oil wheel is standard.



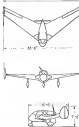
Elia 42

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Marwan-Schabler 185-840

Fourth single-trailer is powered by a **Trane** 60-041, output of 75 hp. Chilled air is up speed of 347 mph., creating 300 and total top of 56. Return is stated to be 100 and, which 375 (psi), and average cooling 30-108 ft. Gross weight is 1,242 lb., capacity is 767 lb. When used in given an 127 sq. ft. Combination is a variety of small, and a remarkably, movable and is utilized.



Microan-Bondliner 300-470

powered by a 340-hp, Renault 4D-01, the 2-4 phase craft is rated to have top speed of 122 mph, and to cruise at 147 mph, while stalling speed is 50. Service ceiling is 25,000 ft, and range is 625 mi. Wing area amounts to 112 sq. ft., gross weight is 1,677 lb., and empty weight is 596 lb. Craft is fish-shaped, without any dorsal and has a retractable, telescopic main



Received 11 June 1999

1101, similar to model 1200, possibly an earlier development; 1201 is noted to have top speed of 160.2 mph, cruising speed of 103.8 and landing speed of 40.5 mph. Range is given as 498.8 mi. Gross weight is 1095.5 lb and empty weight is 525.5 lb. Construction of all metal fuselage covering. Nonpressurized. In use at odd times in warth facilities to house damage in areas of vehicle up tracks.

March 1993 *News article*

New French 5-4 pillow low-slung sofa or you will be 345 lbs. Reptax's unique control system has speed of 905 mph, and can reach speeds of 345 mph. Maximum weight is 1,000 lb., and weight is 1,000 lb. Many other models are 345 sq. ft. Electrically controlled landing gear and all metal construction, including wiring. Price is fixed plus. Local controls are standard equipment.



Congenital Anomalous Pulmonary C.A.P.

Of several designs turned out by Turtalim, some are still shown as wanted in the most popular. A tandem row plane, powered by 50-hp. Cumminsport top speed is given as 80 mph and cruising is 30 mph. Span is 24 ft. Dth. is not given, area 117 sq ft. Full loaded weight 1,500 lb. Production of Turtalim, as craft is named, took about 20 weeks.



00 13792

Four-cylinder Tranch crank is powered by an inline four-cylinder 4-2761 Monarch overhead engine of 148 hp, giving this plane an estimated top speed of 310 mph and cruising speed of over 315 mph, while range is about 780 mi. Construction is all metal, including covering, and landing gear, of tricycle type, is not retractable. Wings have fixed thin rear leading edges.



Area Comparison

His plane, staff designed for emergency, charter and mail service operations, is powered by two 260-hp Lycomings skilled to give a high speed of 187 mph and cruising speed of 225 at an altitude of 10,000 ft. Fuel capacity, around 100 gal, allows a range of 700 to 800 mi. Maximum weight is 4,300 lb, which results in a 2000-lb. empty weight. The loading of 1000 and power loading of 10.2 lb/cu ft. is allowed. Construction is all metal, fuselage being of semi-monocoque design. Craft is fitted with retractable main



Source: HHS.

Widely used vacuum-sharpening and resharpening machine, built for high speed at 220 ft. in 2,000 ft. and average speed of 321 at 36,000 ft. Used by two P & W flying jigs of 450 ft. each, it has initial stock of 1,250 ft. and, with 200-lb. fuel capacity, range of \$35 a ft. Takeoff run to 440 ft. at 1,800 ft. and 1,800 ft. at 1,800 ft. in 1,800 ft. over 30 ft. clearance to full stop at low level is 2,000 ft. With more than 100,000 lbs. of fuel, passenger load varies from five to seven.



Business Aircraft
Corp., Boulder

3.4.2 *place construction*
 type supported to sell
 under \$10,000 on the
 basis of production of
 100 or more units per
 year. Prototype, ad-
 ditional for test flight
 time is provided by
 two 100 hp Cessna
 tail design making the
 high speed of 170
 mph, cruising speed
 of 300 and landing
 speed of 50 mph. Fuel
 was 120 in. while
 cost of installed com-
 mercial wing and
 fuselage structure
 installation designed for
 safety and greater op-
 eration.

Reading: 237
 10/20/2010



**Consolidated Valiant
CB-37**

Being developed from B-24 and NC-44, it is largest transport plane yet. Planned to carry 300 passengers by day, or about half that number in deeper service, it will require six 2,800-hp engines—possibly four—plus six turbojets of emergency power output. Design gross weight, 225,000 lb., range, 124,000 mi.; max. cruise, 4,772 mi. h.; wing loading, 57 lb. sq. ft. Design top speed is 270 mph.



**Carson Wright
CW-12**

Now an engineering study, with prototype scheduled for completion early next year, this engine-driven transport is designed to offer direct operating costs of less than 10¢ per seat mi. To be powered by four turbos—supplementing 8,000-hp engines of 3,400 hp each, it will have maximum cruising speed of 370 mph, at 25,000 ft., and will carry 25,000 lb. of cargo, 1,000 men or 20,000 sq. ft. of freight. Carson propellers will be used.



**Consolidated Valiant
740**

Now 40 passenger transport units to go in service with many domestic carriers. First carrier slated to make one a day by May. First passenger craft to be designed for jet exhaust outlet, this speed adding. Features being made possible by control system and valves. Powered by two 3,600-hp P&W R-3500-CR-16s it will have top speed of 306 mph at 32,000 ft., cruising speed of 260 at 20,000 ft., takeoff rate at 30,000 ft. will be 0.800 ft.



**Borgess C-24
Globemaster**

Control for long-range missions easy work, it can transport up to 124 troops or 60,000 lb. of cargo and 60,000 lb. of fuel. It is designed for high-altitude, low-level and medium-altitude operations. Powered by four P&W R-3000 Turbo Major engines developing 3,500 hp each at sea level, C-24 has high speed of over 460 mph, cruising speed of about 275 mph, and 12,000-gal. fuel capacity gives range of over 4,000 mi. The weight 152,000 lb.



Douglas DC-4

Widely used in both domestic and trans-Atlantic service, plane has adapted to carry from 45 to 50 during World War II, or as late as 60 in scheduled service as cargo carrier. Powered by four 1,600-hp D&G R-1000s, two-door Dash has standard propellers, it has high speed of 270 mph at 15,000 ft., cruising speed of 224 at 12,000 ft. Total of 4,200 sq. ft. of wing area of 24,000 ft.



Douglas C-124

Heavily stressed, standard type craft featuring buffet-free control during emergencies, it has been modified for use as cargo carrier, or as transport, or as a cargo plane, it has two 3,000-hp Consolidated engines within envelope of passenger cabin fitting through narrow-chute shaft, or 40 ft. Hamilton Standard propeller drive system can be used on or without retracting, retracting slide on and



Douglas DC-4

Developed from the DC-3, the principal difference now is power plant—2,000-hp P&W R-3500s, and length 180 ft. 1 in. against 130 ft. 2 in. on the DC-3. It also carries, having a high speed of 242 ft. at 20,000 ft., cruising speed of 200 at 15,000 ft. and normal climb of 1,205 ft. min. Normal range of the craft is 2,677 mi. with 400,000-gal. fuel tank. Landing clearance can be reduced from 32 to 16 ft. Douglas airlines are now taking deliveries to equip terminals fitted with 30 berths.



Percival C-42 Packet

Currently being developed in AAP on warplane design and engine design, the new model should develop with speed about equal to that of standard freight car makes it suitable to work on 10¢ of route. Powered by two 2,200-hp P&W R-3000s, it has high speed of 245 mph at 17,000 ft., cruising speed of 200 at 15,000 ft. Service ceiling of 25,000 ft., range of 4,000 mi. and useful climb of 800 ft. min. (For Design Analysis, see Aviation for Aug. and Sept. 1947.)





Avco Tutor II

Proposed version of Tutor II also has four 1,750 hp. Maytels for cruise 40-60 passengers on government order. Top speed is about 330 mph, cruising 280 mph in cruise ceiling to 35,000 ft. Gross weight is 30,000 lb., and empty is 16,500 lb. As a cruise station, there's even the idea of a freight, which can be carried 1,200 cu. ft. at 700 mph, or 15,000 lb. Payload is 11 ft. in diameter and has an 80% volume of 4,000 cu. ft.



Airspeed Ambassador

New high-speed transport under construction will seat 35-50 passengers and have 120 mph top speed on two 6,000 hp. Bristol Centaurus engines. Of all aerial Ambassador will have retractable landing gear with 1,500-hp. ramjet, cruise ceiling of 35,000 ft., and estimated 1,250-pass. range. Gross weight is to be 45,000 lb., with empty at 21,250 lb. Approximately 600 cu. ft. of fuel will be carried, also 9,000 lb. payload.



Avco Tutor I

Designed by 4 Rolls Royce Maytels at 1,750 hp each, plus 1250 passenger seats in proposed for long range basic, primarily over North Atlantic. Of all aerial construction, civil has 150 mph top speed, 280 mph cruise, and climb at 800 fpm. Gross weight is 30,000 lb., and empty is 16,500 lb. Service ceiling to 35,000 ft. Fuel capacity is shown as 4,000 cu. ft. and five tail sections, of greater size, have been fitted to later models.



Bristol Brabazon I

Because largest aircraft ever under construction, the Brabazon I is in the process of being built. Estimated cost of 3,000 lb. each group is to be divided into a price. A basic model is to be built with Bristol Centaurus engines. The plane is to have top speed of over 300 mph, and cruise at over 200 mph. It will carry 1,250 passengers and will have 1,250-pass. range. Gross weight is to be 45,000 lb., with empty at 21,250 lb. It is to carry 6,000 cu. ft. of fuel and will have 1,250-pass. range.



Bristol Brabazon II

Designed to be a low-cost stage liner capable of operating in and out of rough fields, the Brabazon II is proposed by May 1954. It has Bristol Centaurus engines, basic power and has a cruise of 1,800 mph at 30,000 ft. The speed is 300 mph at 3,000 ft., and landing is 120 mph. Gross weight is 31,800 lb. and empty weight is 17,000 lb. Fuel capacity is 4,000 cu. ft. and five tail sections, of greater size, have been fitted to later models. The structure is all metal.



DN 200

Small 5-15 place land-craft is an all-British production, having 200-hp. D.H. engine. It is a two-engine aircraft with a top speed of 300 mph. It has a cruise of 1,800 mph at 30,000 ft. The speed is 300 mph at 3,000 ft., and landing is 120 mph. Gross weight is 31,800 lb. and empty weight is 17,000 lb. Fuel capacity is 4,000 cu. ft. and five tail sections, of greater size, have been fitted to later models. The structure is all metal.



Gullitt-Gunn Caswell

Proposed new land-craft is to carry 15-20 passengers of top speed of 300 mph. Cruise speed is to be 210 mph and landing 120 mph. Gross weight is 31,800 lb. and empty 17,000 lb. Fuel capacity is 4,000 cu. ft. and five tail sections, of greater size, have been fitted to later models. The structure is all metal.



Fairchild Study

New 5-15 place land-craft, proposed for 400-hp. P & W V-turbo engines. It is a two-engine aircraft with a top speed of 300 mph. It has a cruise of 1,800 mph at 30,000 ft. The speed is 300 mph at 3,000 ft., and landing is 120 mph. Gross weight is 31,800 lb. and empty weight is 17,000 lb. Fuel capacity is 4,000 cu. ft. and five tail sections, of greater size, have been fitted to later models. The structure is all metal.





PLAT 6.231

One of Best Tail on Study Boats, with a gross weight of 3,000 lbs., says a fishing boat company. It weighs 1,000 lbs. in England, 1,500 lbs. in France, 2,000 lbs. in Sweden, up to 400 and 500 lbs. in those P&W boats. A top speed of 200 ft. in 8,000 ft. is obtained. Gross weight is gross to 1,200 lbs., empty is 200 lbs. Costing is 200,000 ft. and it is 100 ft. long with a netting area of 100 ft. and a height of 12 ft. It can be extended. Construction is all-metal, and hulling gear is of aluminum. It is retractable type.



Severed Aircraft

Overland Transport. It is desired to carry maximum loads of freight or passengers and to be powered by a 600/1600-hp Diesel Electric, expected to give craft a top speed of about 200 mph. On 500 gal. of fuel, range is planned at 500 mi. Gross weight would be 87,000 lb. Cargo loading will be accomplished through an opening beneath main hull. Fuel loading is to be 30.53 lb. on ft. Cargo is to be 600 lbs.



Authors' Addresses

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Hollings, Hollingsworth

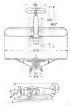
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Various models of this new 24-ft class high-speed skiff are under way some in late project, some in plans, others already under way. Most skiffs is powered by 1,800-hp. Bristol Motor sales put the top speed of 350 and average speed of 254. Ceiling is said to be 20,000 ft, and range 3,400 mi.

Powerplant company will be fitted in production. Skiff 311 with 200-hp propeller is planned for 250 mph. (skiff 311)



Shelter is many purchases to 250-300. Some 200 also has 6 Winged Cypresses at 1000 by each, giving this 60-acre area a top seed of 250 mph, consisting of 2000 sq. ft. and range of 3,750 sq. ft. Wing area is 2,000 sq. ft. and gross weight 250,000 lb. Empty weight is 71,000 lb. A grow of size is extremely rare. This craft has already made some flights across South Atlantic to Argentina and other Latin American countries. As a champion, 200 mph, 2000 sq. ft. wing area.



**Boeing B-50**

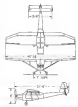
Developed from the B-29, Superfortress, the B-50 is the first bomber plane to use the new "jet" engine—two 4,500-hp Pratt & Whitney engines, each with a turbo-propeller. This increase in power means greater payload, more speed and performance, with high speed sustained at better than 320 mph, cruising speed roughly 280 mph, and service ceiling of over 30,000 ft. Over 600 bomber squadrons were active in developing this new type.

**Consolidated Valiant B-51**

First plane to fly with a turbojet, this four-engine bomber has an engine power plant. In the case of a disabled engine, the B-51 will fly with one engine and still carry its full load. It is a four-engine bomber, 4,500-hp Pratt & Whitney engines, each with a turbo-propeller. This increase in power means greater payload, more speed and performance, with high speed sustained at better than 320 mph, cruising speed roughly 280 mph, and service ceiling of over 30,000 ft. Over 600 bomber squadrons were active in developing this new type.

**Consolidated Valiant B-51**

Designed as ready to carry up to 10,000 lbs. of "payload," this four-engine bomber has a high speed sustained at better than 320 mph, cruising speed roughly 280 mph, and service ceiling of over 30,000 ft. Over 600 bomber squadrons were active in developing this new type.

**Curtiss X97C-1**

Designed for carrier duty, 30 are being built. This four-engine bomber has a high speed sustained at better than 320 mph, cruising speed roughly 280 mph, and service ceiling of over 30,000 ft. Over 600 bomber squadrons were active in developing this new type.

**Curtiss X97C-1**

Designed from B-29, this four-engine bomber has a high speed sustained at better than 320 mph, cruising speed roughly 280 mph, and service ceiling of over 30,000 ft. Over 600 bomber squadrons were active in developing this new type.

**Douglas XB-35 Skyrocket**

Designed for work from 30,000 ft. to 50,000 ft. in 10,000 ft. of altitude, this bomber has a high speed sustained at better than 320 mph, cruising speed roughly 280 mph, and service ceiling of over 30,000 ft. Over 600 bomber squadrons were active in developing this new type.

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No.3

Aircraft Specifications

[illegible]

NAME	ADDRESS	CITY	STATE	ZIP	DATE	TIME	TYPE	STATUS	REMARKS
John Doe	123 Main St	New York	NY	10001	1998-01-01	10:00	Normal	OK	
Jane Smith	456 Elm St	Los Angeles	CA	90001	1998-01-02	11:00	Normal	OK	
Bob Johnson	789 Oak St	Chicago	IL	60601	1998-01-03	12:00	Normal	OK	
Alice Brown	101 Pine St	San Francisco	CA	94101	1998-01-04	13:00	Normal	OK	
Charlie White	202 Cedar St	Phoenix	AZ	85001	1998-01-05	14:00	Normal	OK	
Diana Green	303 Birch St	Philadelphia	PA	19101	1998-01-06	15:00	Normal	OK	
Frank Black	404 Spruce St	San Diego	CA	92101	1998-01-07	16:00	Normal	OK	
Grace Hall	505 Ash St	Dallas	TX	75201	1998-01-08	17:00	Normal	OK	
Henry King	606 Hickory St	San Jose	CA	95101	1998-01-09	18:00	Normal	OK	
Ivy Lee	707 Walnut St	Austin	TX	78701	1998-01-10	19:00	Normal	OK	
Jack Miller	808 Maple St	Fort Worth	TX	76101	1998-01-11	20:00	Normal	OK	
Karen Wilson	909 Poplar St	San Antonio	TX	78201	1998-01-12	21:00	Normal	OK	
Leo Taylor	1010 Cherry St	San Jose	CA	95101	1998-01-13	22:00	Normal	OK	
Mary Evans	1111 Elm St	San Francisco	CA	94101	1998-01-14	23:00	Normal	OK	
Nathan Scott	1212 Oak St	San Diego	CA	92101	1998-01-15	00:00	Normal	OK	
Olivia Adams	1313 Pine St	San Jose	CA	95101	1998-01-16	01:00	Normal	OK	
Peter Baker	1414 Cedar St	San Antonio	TX	78201	1998-01-17	02:00	Normal	OK	
Quinn Clark	1515 Birch St	San Jose	CA	95101	1998-01-18	03:00	Normal	OK	
Rachel Evans	1616 Spruce St	San Francisco	CA	94101	1998-01-19	04:00	Normal	OK	
Samuel Green	1717 Ash St	San Jose	CA	95101	1998-01-20	05:00	Normal	OK	
Tina Hall	1818 Hickory St	San Antonio	TX	78201	1998-01-21	06:00	Normal	OK	
Uma King	1919 Walnut St	San Jose	CA	95101	1998-01-22	07:00	Normal	OK	
Victor Lee	2020 Maple St	San Francisco	CA	94101	1998-01-23	08:00	Normal	OK	
Wendy Miller	2121 Poplar St	San Jose	CA	95101	1998-01-24	09:00	Normal	OK	
Xavier Wilson	2222 Cherry St	San Antonio	TX	78201	1998-01-25	10:00	Normal	OK	
Yara Taylor	2323 Elm St	San Jose	CA	95101	1998-01-26	11:00	Normal	OK	
Zoe Adams	2424 Oak St	San Francisco	CA	94101	1998-01-27	12:00	Normal	OK	
Adam Baker	2525 Pine St	San Jose	CA	95101	1998-01-28	13:00	Normal	OK	
Bella Clark	2626 Cedar St	San Antonio	TX	78201	1998-01-29	14:00	Normal	OK	
Carl Evans	2727 Birch St	San Jose	CA	95101	1998-01-30	15:00	Normal	OK	
Dora Green	2828 Spruce St	San Francisco	CA	94101	1998-01-31	16:00	Normal	OK	
Ethan Hall	2929 Ash St	San Jose	CA	95101	1998-02-01	17:00	Normal	OK	
Fiona King	3030 Hickory St	San Antonio	TX	78201	1998-02-02	18:00	Normal	OK	
Gavin Lee	3131 Walnut St	San Jose	CA	95101	1998-02-03	19:00	Normal	OK	
Helen Miller	3232 Maple St	San Francisco	CA	94101	1998-02-04	20:00	Normal	OK	
Ivan Wilson	3333 Poplar St	San Jose	CA	95101	1998-02-05	21:00	Normal	OK	
Julia Taylor	3434 Cherry St	San Antonio	TX	78201	1998-02-06	22:00	Normal	OK	
Kyle Adams	3535 Elm St	San Jose	CA	95101	1998-02-07	23:00	Normal	OK	
Laura Baker	3636 Oak St	San Francisco	CA	94101	1998-02-08	00:00	Normal	OK	
Mia Clark	3737 Pine St	San Jose	CA	95101	1998-02-09	01:00	Normal	OK	
Nora Evans	3838 Cedar St	San Antonio	TX	78					

+1100	-62° 37'	-02° 48'	(3)	240	[11.9 / 17]	[0.1 / 0.8]	[0.4 / 1]	4100	1000	[17.1 / 10.3]	GeTe (T 30x10)			[Al]	[Al]	[Noblemetal]
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* Also available with 800-kg. Warner slings or Forklift 15-9
† Passenger models will have all seats heating pad
‡ W/S modifications: High seat expected to reach 1,700 mph
§ Two variants, each with 1 F&W 6-4000 and 1 104-1-20
|| Clearinghouse Project E-2000 as well as J-21 program at 1990 Rumsfeld report

Aviation's Helico

Manufacturer	Source				Performance					
	Destination or Model No.	Year	No. of engines	Make of engine	Rated in shaft horsepower	Maximum in shaft horsepower	Rated speed in rpm	Max. speed in rpm	Altitude, ft.	Altitude, ft. at max. speed
B&W Aircraft Co.	B-1	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
	B-2	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
Beech Aircraft Co.	Model 10	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
	Model 10A	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
Boeing Aircraft Co.	Model 240	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
	Model 240A	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
Boeing-Stearman Aircraft Co.	Model 240	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
	Model 240A	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
Boeing-Stearman Aircraft Co.	Model 240	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
	Model 240A	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
Boeing-Stearman Aircraft Co.	Model 240	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
	Model 240A	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
Boeing-Stearman Aircraft Co.	Model 240	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
	Model 240A	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
Boeing-Stearman Aircraft Co.	Model 240	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
	Model 240A	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
Boeing-Stearman Aircraft Co.	Model 240	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
	Model 240A	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
Boeing-Stearman Aircraft Co.	Model 240	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
	Model 240A	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
Boeing-Stearman Aircraft Co.	Model 240	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
	Model 240A	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
Boeing-Stearman Aircraft Co.	Model 240	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
	Model 240A	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
Boeing-Stearman Aircraft Co.	Model 240	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
	Model 240A	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
Boeing-Stearman Aircraft Co.	Model 240	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
	Model 240A	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
Boeing-Stearman Aircraft Co.	Model 240	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
	Model 240A	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
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Boeing-Stearman Aircraft Co.	Model 240	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
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	Model 240A	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
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Boeing-Stearman Aircraft Co.	Model 240	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
	Model 240A	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
Boeing-Stearman Aircraft Co.	Model 240	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
	Model 240A	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
Boeing-Stearman Aircraft Co.	Model 240	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
	Model 240A	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
Boeing-Stearman Aircraft Co.	Model 240	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
	Model 240A	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
Boeing-Stearman Aircraft Co.	Model 240	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
	Model 240A	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
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	Model 240A	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
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	Model 240A	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
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	Model 240A	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
Boeing-Stearman Aircraft Co.	Model 240	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000
	Model 240A	1935	2	Wasp	440/500	515	1900	2000	10,000	12,000

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SEARCH AIRCRAFT

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1990年		1991年		1992年		1993年		1994年		1995年		1996年		1997年		1998年		1999年		2000年		2001年		2002年		2003年		2004年		2005年		2006年		2007年		2008年		2009年		2010年		2011年		2012年		2013年		2014年		2015年		2016年		2017年		2018年		2019年		2020年		2021年		2022年		2023年		2024年		2025年		2026年		2027年		2028年		2029年		2030年		2031年		2032年		2033年		2034年		2035年		2036年		2037年		2038年		2039年		2040年		2041年		2042年		2043年		2044年		2045年		2046年		2047年		2048年		2049年		2050年		2051年		2052年		2053年		2054年		2055年		2056年		2057年		2058年		2059年		2060年		2061年		2062年		2063年		2064年		2065年		2066年		2067年		2068年		2069年		2070年		2071年		2072年		2073年		2074年		2075年		2076年		2077年		2078年		2079年		2080年		2081年		2082年		2083年		2084年		2085年		2086年		2087年		2088年		2089年		2090年		2091年		2092年		2093年		2094年		2095年		2096年		2097年		2098年		2099年		2100年	
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1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398</
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Category	Sub-category	Value
Total	1990	100
	1991	100
	1992	100
	1993	100
	1994	100
Sub-category	1990	100
	1991	100
	1992	100
	1993	100
	1994	100

[illegible]

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Q — Overall
 R — Rating
 S — Survey
 T — Treatment
 U — Unpublished
 V — Value
 W — Weight
 X — X-ray
 Y — Year
 Z — Zone

1. *2010 Survey* by J. Wilson, Ed., General Motors Corp.
2. *2010 Survey* by J. Wilson, Ed., General Motors Corp.
3. *2010 Survey* by J. Wilson, Ed., General Motors Corp.
4. *2010 Survey* by J. Wilson, Ed., General Motors Corp.
5. *2010 Survey* by J. Wilson, Ed., General Motors Corp.
6. *2010 Survey* by J. Wilson, Ed., General Motors Corp.
7. *2010 Survey* by J. Wilson, Ed., General Motors Corp.
8. *2010 Survey* by J. Wilson, Ed., General Motors Corp.
9. *2010 Survey* by J. Wilson, Ed., General Motors Corp.
10. *2010 Survey* by J. Wilson, Ed., General Motors Corp.

Aviation's Turbojet Specifications

[illegible]

TAX REVISION...

Can Make or Break American Business

IS THE American way of life—progress by private initiative—going to get a fair chance to demonstrate its superiority over all the challenging varieties of collectivism?

That's the real question before Congress as it confronts the long labor of reenslaving the federal tax structure. What Congress does about taxes will come pretty close to making or breaking the U.S.A.

Today the tax colossus that sprawls across the national economy is unguided by any central nervous system. Its crushing weight comes down first here, then there, as the giant wobbles around, unguided by any central purpose except to grab as much as it can.

The central purpose of a tax system is simple: it should raise the necessary revenue without placing unnecessary fetters on enterprise.

As recently as 1929 federal taxes took only one dollar out of every twenty of national income. A home-grown and inconsistent tax structure was a *raisonne* then. But it wasn't serious.

Today the federal tax burden is the dominant element in the nation's economy.

Even if Congress succeeds in cutting \$6 billion out of President Truman's \$21.5 billion budget, federal taxes still will take about one dollar out of every five of the national income. And few Congressmen are hopeful enough to think that they can get the tax load below \$25 billion for any year that is in sight.

Dentist Budget Cuts Required

Indeed, to get the tax load down to \$25 billion, Congress will have to stop treating expenditures, like those for military purposes and veterans, as politically sacrosanct. Congress must scrutinize every item in the budget. Economy must go along with tax cutting or we shall end in bankruptcy.

Suppose that expenditures are slashed to the bone. Our taxes still will be so heavy that the more they are loaded on the nation's back will make a big difference in how well the nation gets along. That's something which the poorer beam has tended to obscure. It will become much clearer as this beam wears off. Then a remodeling of the federal tax system to remove its manifold obstructions to private enterprise will be of transcendent and obvious importance to everybody.

Tax Experts Agree

The remodeling will require political courage plus tax wisdom. Congress must supply its own political

coverage. But it can lean on tax experts for tax wisdom. Fortunately, tax experts now agree on the necessary reforms—especially on those that will remove obstructions to business. How well the tax experts agree is shown in the charts on the next page, incorporating answers to a questionnaire on possible federal tax reforms. The questions were asked by the Department of Economics of the McGraw-Hill Publishing Company. The answers came from a broad cross-section of tax experts, including the authors of a considerable crop of books on postwar federal taxes and what to do about them.

The experts agree (see the charts) that double taxation of corporate dividends should stop.

They agree that the tax rate on corporate income (now 18 percent) should be reduced as rapidly as possible to the initial rate on individual income (now 20 percent).

And they agree overwhelmingly that it is desirable to let net losses be subtracted from net profits over a 3-to-6-year period in computing business income for tax purposes.

All these changes would stimulate corporate initiative and hence make job. Averaging business income would make new ventures attractive even though these ventures might result in early losses. Reduction of the corporate income tax would have the same effect. So, too, would the elimination of the highly discriminatory provision whereby corporate dividends are taxed first as corporate profits, and again when received as income by individuals.

Penalties and Incentives

Beyond these changes, there must be an end to tax penalties on individual initiative. Consider the struggling business man who cannot deduct his expenses from year to year. Because of his enterprise he may pay, on the same income, twice as much federal income tax as the man who plays it safe for a steady income. That's because he can't average his personal income over several years for tax purposes. He can count as heavy taxation of his good-year profits with no chance for offsetting against them his bad-year losses. It is a case of hands you lose, tells the tax collector who. Rightly, six percent of the experts agree that an income-averaging allowance for individuals is desirable.

Three-quarters of them also agree that tax rates at the top end of the individual income scale (now running up almost to 50 percent) should come down. In my judgment, the total tax should not amount to more than 33 percent to encourage business men to venture for high stakes.

Advocating tax relief for men in the higher income brackets—and particularly for management men—has been considered political suicide for more than a decade. Some members of Congress still hold that view. A Democratic Congressman from Michigan told an Illinois colleague who advocated cutting upper bracket taxes, "if you put that idea forward at home, you won't come back."

The Congressman has an even better chance of not going back if our economy keeps down. One of the best ways to keep it down is to keep the taxes that destroy business incentives and block enterprise—for example, the confiscatory rates which drive the people in the high brackets away from risk-taking.

To give the American system of individual enterprise a fair chance was clearly the mandate of November's election. To give it that chance, enterprise business men must have a chance to make large rewards—as well as the always-present chance to lose their shirts. Under present tax rates, they don't get a break.

Prevailing federal tax law threatens both business enterprise in other ways. It fails, for example, to encourage research and rapid industrial modernization. It tends to siphon investments away from private enterprise, driving it into tax exempt state and local securities. (The experts agree almost to a man that such tax exemption must be eliminated.) The list of obstacles could be amplified.

Hit-and-Run Revision Distress

Most of the reforms needed to prevent the federal tax system from smothering enterprise would lower federal revenues, at least temporarily. Elimination of the double taxation of corporate dividends might lose \$800 million. Dropping the corporate income tax from 36 percent to 25 percent might cut away as much as \$4 billion.

Because we can not avoid enormous federal expenses in the years immediately ahead, all badly needed reforms of the type to which this article is confined obviously can't be made at once. Also there are other tax reforms bearing on consumption which obviously should be weighted in an overall program of tax revision.

But this is equally obvious: We should have a general design for tax revision which would line up all the necessary steps. Then we could get ahead with tax reductions as rapidly—and as sensibly—as revenue requirements and political courage would permit. Tax cutting may come piecemeal, but tax planning must not.

Through such a design we might discover that some decidedly beneficial improvements in the federal tax structure can be made at relatively slight cost. But today there's no way to be sure. No one in Washington with access to the information has even undertaken to make the necessary estimate.

Instead, federal tax revision continues to be a hit-and-run business—and a short-run political business. Take, for example, the proposal of a 20 percent tax reduction across the board. There are virtues in such a proposal. But have they stuck up because many other extremely urgent needs for tax reform remain a mystery.

Congress must dispel such mysteries. Only in that way will it do the job of converting our present jerry-built tax structure into a modernized one suited for the American system of private initiative, sparked by adequate incentives.

James H. McGraw, Jr.

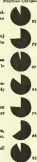
President McGraw-Hill Publishing Company, Inc.

EXPERT OPINION ABOUT TAX REVISION

TAX EXPERTS THINK WE SHOULD:

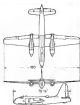
1. Eliminate double taxation of corporate dividend distributions and cut new taxes on corporate profits and then again on individual income.
2. Reduce corporate income tax rate (now 30%) as rapidly as budget needs permit until it equals the initial rate for individual income (now 30%).
3. Provide for averaging business taxable income over a period of about 6 years to allow for losses in bad years.
4. Provide for averaging individuals' taxable income over a period of a few years so as to limit fairly those whose income fluctuates.
5. Reduce upper bracket individual income tax rates to a maximum of 30% in the \$100,000 bracket and 25% in the million and over bracket.
6. Treat capital gains, now taxed at a lower rate, like other income but provide full allowances for losses.
7. Remove the privilege of tax exemption from all future issues of state and local government bonds.

% Of Tax Experts Favoring the Proposed Changes



Lockheed P2V-7 Neptune

Many craft of this type exceed 27,000 ft. Cruise normally at world distance speed of 31,400 m.p.h. Flight from Perth Australia to Colombia, Colo., through design gross wt. is 58,000 lb. Type about 20,000 lb. off weight JATO's at 42,500 lb. for range loading of 20,000 lb. per sq. ft. Powered by six 3,000-hp. R-3358. Wingspan 140 ft. 6 in. High speed is 417,000 m.p.h., while landing speed is listed at 70 mph. Span is 130 ft., length is 70 ft. 9 in.



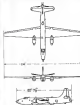
McDonnell F-10 Phantom

First all-jet plane to go in service with Navy for carrier duty, F-10 has high speed of over 600 mph. Powered by two Allison J44-PA-10 turbojets, it has a maximum speed of 600 mph. In one minute it can climb 27,000 ft. and range of over 1,000 mi. Weight (empty) of 10,000 lb. Gross weight is 22,000 lb. Armament consists of four 50-cal. m.p. machine guns in nose. (Also an addition for Navy, 1961.)



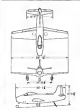
Martin 2PM-1 Neptune

New long range patrol, bomber, and transport-carrying craft in service. Transport power plants include two engines. Each weighs less than 10,000 lb. Wing developed 6,800 lb. thrust. New, and General Electric 2,324-lb. developed 4,000 lb. static sea level thrust. With crew of ten and gross weight of 60,000 lb., including 8,000-lb. load, load-range is 1,000 mi. High speed is 40,000 ft. gross weight is 200 mph on long-range cruising engine and jets.



North American F-100

Expected to be Navy's fastest plane at a relatively small cost with high speed "all over 500 mph" in production, it is North American's first entry in jet-powered fighters, believed likely to be an F-100. It is a member of the A-10. Powered by one General Electric J47-10 and two turbojets, F-100 has weight standard (empty) of 10,000 lb. Gross weight is 22,000 lb. In this, high speed, standard. New design has disposable 10,000 lb.



Another Leader ON TIMKEN BEARINGS

Like all other leading aircraft introduced and produced in the meteoric career of American Aviation, the giant new B-36 long-range bomber built by the Consolidated Vultee Aircraft Corporation — and designed to carry 10,000 pounds of bombs 10,000 miles — is equipped at vital parts

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Timken Bearings on the B-36 reduce friction, conserve power and withstand all radial, thrust and combined loads under all takeoff, flight and landing conditions.

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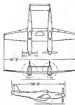
THE TIMKEN ROLLER BEARING COMPANY, CANTON, O., U.S.A.

TIMKEN
TAPERED ROLLER BEARINGS



**North American
P-42 Twin Mustang**

Developed from the Mustang, this long range combat aircraft, with double cowling, is a pilot in action, giving it the ability to attack in the air. Powered by two Packard Model 1800 engines, the Mustang is a high speed, high altitude fighter. It has a top speed of 400 mph, and a range of 2,000 miles. It is a true fighter, and is the most powerful of all fighters.



Northrop XB-35

World's largest flying wing aircraft, this aircraft is a true fighter. It has a top speed of 400 mph, and a range of 2,000 miles. It is a true fighter, and is the most powerful of all fighters.



**Northrop P-61
Fighting Falcon**

Developed from the Mustang, this long range combat aircraft, with double cowling, is a pilot in action, giving it the ability to attack in the air. Powered by two Packard Model 1800 engines, the Mustang is a high speed, high altitude fighter. It has a top speed of 400 mph, and a range of 2,000 miles. It is a true fighter, and is the most powerful of all fighters.



**Republic P-48
Thunderbolt**

Developed from the Mustang, this long range combat aircraft, with double cowling, is a pilot in action, giving it the ability to attack in the air. Powered by two Packard Model 1800 engines, the Mustang is a high speed, high altitude fighter. It has a top speed of 400 mph, and a range of 2,000 miles. It is a true fighter, and is the most powerful of all fighters.



The DC-4's used by

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Airlines

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Capital Airlines use the Vickers Units shown at the left in the 2000 psi hydraulic system on its DC-4's.

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Consolidated Values 20-04

First phase of year get number now being needed by extensive flight test program. Powered by four General Motors 1-15 turboprop developing 1060 hp (some are less) thrust. Two sets, are located in ducts inside at each side, giving good appearance of being two engine type. Closed in section fuselage, its 117 ft wingspan makes it nearly as large as Boeing P-29 which has span of 115 ft. It is 33 ft 8 in long to 145 ft 9 in. Swept-back air sharply pointed swept-back surfaces at forwardmost sections in nose and aft-mostage bubble around dorsal pilot cockpit window.



Consolidated Volume 1B-14

World's largest banyan now in production at Central's 27th Street Texas plant. Capable of carrying an average load to its sheltered canopy of 10,000 and maintaining same without felling, it now carries 12,000 lb of loads. (10000 lb. at maximum capacity of 12,000 lb. at heavy classes. Gross weight = 120,000 lb.)



Exp-Sys 10/19/02

One of these of this company's engines (type delivered to North Test Center at Patuxent River, MD) Principal differences in the propeller modification: no leading corner fillets, no a Hineskin Standard, the other no Aircraft-look. Reducetorque course plant is PAV R 260 of 1300 hp, propeller located in lower part of aft fuselage is 48in. Diameter, half. Half of 11 in. unit. Any kind of data is obtained from participating member through an ad or e-mail or via. No performance or construction data have been released by them, one has information on possible work.



Polysyllabic 2500-2

Newest Xerox jetcopy inkjet is designed to give students plenty of bang for the buck, says they will like to. Powered by Xerox 3200i. Laminating copies using a 3200i Standard Graphics, Xerox has high speed of over 150 pages and ink in excess of 1,000 pages. Features a standard output developed by Xerox, Xerox and Xerox—designed for easy integration—so which all controls are based on simple graphics. This student focus at becoming of making more are limited and can show they will be to some relative location (perhaps of some of them) to make them to be.



**Martin AM-1 Mauler**

Dive- and target-bomber now in production for the Navy, its sixth engine compartment (third from left) comprised of modular can be stored beneath wings, adding greatly to maneuver. Powered by 3,600-hp Pratt & Whitney R-3600 Turbo Major turbine Charles Christie propeller, Mauler has maximum speed of over 400 mph, and cruising range of more than 3,100 mi. Span is 30 ft, 2 in., 2 in., length is 42 ft, 6 in., height is 16 ft, 11 in. Wing area totals 400 sq ft. Gross wt. is 22,000 lb., wt. empty is 14,500 lb.

**Martin AM-2 Mauler**

Developed from well-known Nord Air Transport Service type, it differs from predecessor only in that it is powered by two P&W R-3600 Turbo Major prop. 3,600 hp each, 12,800 lb. max 9,000 lb. Wright 1. With range of 3,100 mi., it has top speed of over 200 mph and service ceiling of 20,000 ft. Span is 30 ft, 2 in., length is 42 ft, 6 in., height is 16 ft, 11 in. Wing area totals 380 sq ft. Gross weight of this new type is 16,000 lb., empty weight is 11,250 lb. Cost, C. 11. Development, now of NAVA, has had cooperation with GAO for glide landing trials, contemplating use of flying boats of the Mauler type.

**Knight XP16-1**

A modification for greater maneuverability in combat speed range, is featured in design of this sub-surface-diving aircraft. Some have a four engine model and two engine version for performance. It is said that with standard power plants speed range from 40-100 mph, which will be improved to 50-150 mph with gas turbine 3,000 hp each. Total power will be powered by two P&W R-3600 Turbo Major 3,600 hp each. Most noteworthy characteristic is engine ability to shut down on specially built wings, which allows maximum low level flight by Charles Zimmerman.

**Knight XP16-1 Pirate**

New engine/lighter developed for Navy, the first jet-powered craft to be built by "Chase Knight Aircraft. Powered by Westinghouse 240 cubic ft per minute is the "well over 100 mph" type. Air in tubes are fitted in wing leading edges, and carburetor engine is located in lower part of fuselage. Span is 30 ft, 2 in., length is 42 ft, 6 in., and height is 16 ft, 11 in. Features of craft is extensive use of Plexiglas and structural material consisting of one-third sheet of high strength aluminum alloy bonded to foam wood core giving smooth finish and light weight.

**Armstrong Whitworth 62**

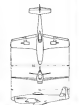
Delivers fine jet off wing surface with a recently type for each wing data on fuselage main addition per on-wing hours. Powered by two Pratt & Whitney R-3600 Turbo Major prop. 3,600 hp each, 12,800 lb. max 9,000 lb. Wright 1. With range of 3,100 mi., it has top speed of over 200 mph and service ceiling of 20,000 ft. Span is 30 ft, 2 in., length is 42 ft, 6 in., height is 16 ft, 11 in. Wing area totals 380 sq ft. Gross weight of this new type is 16,000 lb., empty weight is 11,250 lb. Cost, C. 11. Development, now of NAVA, has had cooperation with GAO for glide landing trials, contemplating use of flying boats of the Mauler type.

**Bristol Brigard**

A new British aircraft target-bomber designed to carry wide range of offensive armaments. Powered by two P&W R-3600 Turbo Major prop. 3,600 hp each, 12,800 lb. max 9,000 lb. Wright 1. With range of 3,100 mi., it has top speed of over 200 mph and service ceiling of 20,000 ft. Span is 30 ft, 2 in., length is 42 ft, 6 in., height is 16 ft, 11 in. Wing area totals 380 sq ft. Gross weight of this new type is 16,000 lb., empty weight is 11,250 lb. Cost, C. 11. Development, now of NAVA, has had cooperation with GAO for glide landing trials, contemplating use of flying boats of the Mauler type.

**Commonwealth C.A. 18**

Latest American designed sub-surface-diving aircraft standing room clear in N.A.A. Market, but has little export interest. Powered by Pratt & Whitney R-3600 Turbo Major prop. 3,600 hp each, 12,800 lb. max 9,000 lb. Wright 1. With range of 3,100 mi., it has top speed of over 200 mph and service ceiling of 20,000 ft. Span is 30 ft, 2 in., length is 42 ft, 6 in., height is 16 ft, 11 in. Wing area totals 380 sq ft. Gross weight of this new type is 16,000 lb., empty weight is 11,250 lb. Cost, C. 11. Development, now of NAVA, has had cooperation with GAO for glide landing trials, contemplating use of flying boats of the Mauler type.

**OW Swallow**

Designed to replace current production is relative to design overhead wings and can be pulled into for a high-speed attack. Available for delivery, Swallow is powered by two P&W R-3600 Turbo Major prop. 3,600 hp each, 12,800 lb. max 9,000 lb. Wright 1. With range of 3,100 mi., it has top speed of over 200 mph and service ceiling of 20,000 ft. Span is 30 ft, 2 in., length is 42 ft, 6 in., height is 16 ft, 11 in. Wing area totals 380 sq ft. Gross weight of this new type is 16,000 lb., empty weight is 11,250 lb. Cost, C. 11. Development, now of NAVA, has had cooperation with GAO for glide landing trials, contemplating use of flying boats of the Mauler type.



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600 Vampire

NEW 10,000-lb. 600 VAMPIRE shows Ryan's jet engine, turbo-propeller, and turbo-jet engine. Powered by a 2,000-hp. turbo-jet engine, top speed 540 mph, climb to 40,000 ft. in 10 min. Service ceiling 40,000 ft. and range 1,000 mi. One version is a wood and metal, and another is a metal. Total weight 10,000 lb., climb to 40,000 ft. in 10 min. Service ceiling 40,000 ft. and range 1,000 mi.



Pelican Hawk

A prototype design of Ryan's Hawk jet engine, turbo-propeller, and turbo-jet engine. Powered by a 2,000-hp. turbo-jet engine, top speed 540 mph, climb to 40,000 ft. in 10 min. Service ceiling 40,000 ft. and range 1,000 mi. One version is a wood and metal, and another is a metal. Total weight 10,000 lb., climb to 40,000 ft. in 10 min. Service ceiling 40,000 ft. and range 1,000 mi.



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Glenn Martin

Improved version of Ryan's Hawk jet engine, turbo-propeller, and turbo-jet engine. Powered by a 2,000-hp. turbo-jet engine, top speed 540 mph, climb to 40,000 ft. in 10 min. Service ceiling 40,000 ft. and range 1,000 mi. One version is a wood and metal, and another is a metal. Total weight 10,000 lb., climb to 40,000 ft. in 10 min. Service ceiling 40,000 ft. and range 1,000 mi.





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Boeing 310

Lower French postal airlines in payment for a Constellation of 1,000 lbs each and at 117.50 gross weight, top speed is said to be 250 mph, and cruising speed 150, while normal range is over 2,000 to 3,000 miles in 22,400 lbs. and gross wing area 1,000 sq. ft. A conventional landing gear model T31, lower very similar characteristics, but has three forward engines. Availability to passengers is possible while in flight. Non-working feature is nose door design.



Aircraft 30-70

French high-speed aircraft (100 mph) built by the French Air Force in 1934. It carries 100,000 lbs. of fuel, weighs 10,000 lbs. and has a cruising speed of 150 mph. It has a range of 1,000 miles.



Boeing 310

New French carrier aircraft carrier, in service by the 100th Air Force, Boeing 310. Top speed 250 mph, range 1,000 miles, weight 11,000 lbs., max. payload 10,000 lbs.

Boeing Post P. 108

Boeing passenger aircraft is to have four engines (Boeing 310, 311, 312, 313). Construction is to be all metal. Boeing 310, it will have a range of 1,000 miles and a cruising speed of 150 mph.



Avro Nico-Landmark

Modified transport line had two engines (Boeing 310, 311, 312, 313). Construction is to be all metal. Boeing 310, it will have a range of 1,000 miles and a cruising speed of 150 mph.



Boeing 310-75

Boeing 310-75 is a light bomber, in service, range 1,000 miles, weight 11,000 lbs., max. payload 10,000 lbs.

Squadron-Bus 31/41

Boeing 310-75 is a light bomber, in service, range 1,000 miles, weight 11,000 lbs., max. payload 10,000 lbs.





BoE Aircraft Corp. Model 41

A two-phase unit developed for corporate and personal use powered by a 450-hp Pratt & Whitney Wasp engine. With a 65-gal fuel capacity, its range is set at 2000 mi, 2300 speed to 120 mph, cruising at 180 and service ceiling at 23,400 ft. Using a two-blade main rotor, it features the stabilizing bar developed by Arthur Young. All metal fuselage has become composite type interior.



Bill Aircraft Corp. Model 42

The best helicopter to be granted a commercial license is the UH-1, this two-place model is in production—an actual estimate of 200 being placed for completion this Spring. Powered by a 150-hp Franklin engine it has a high speed of 100 mph, cruise air speed of 80 and turning range of 21.6 mi. 1000 ft climb in 2.08 sec and average ceiling in 11,700 ft. It is also licensed for day operation.



Needle Mollusphaera, Inc. Model J

Designed to carry four persons at peak and cargo load, the truck is slated for production this year to satisfy both conventional plant. Its power plant is a 450-hp Ford 6.8-liter V8. Whip Jr. engine, and housing is aluminum alloy. No performance data are available pending completion of extensive light test program. It also will feature existing color leather, aluminum, and torque axle.



Chrysomelidae Latr.

This design by Jean de Clappetiere sponsored by the American Text & Co., would utilize boundary layer control as a means of delaying stall of airward moving blades. By taking off boundary layer air a lower angle of attack—and consequent deformation of stallless field possible. Also taking stall off is possible by using the engine to drive a propeller to rotate blades through the stall.



DeWitt Procter Publications, Inc. 42.5

This single-phase, all-metal craft is being developed largely as a flying laboratory to test design ideas for the future DC-14 shown at right. It is possible, however, that the DC-14 may be used for innovative-type transportation or for mail/package delivery. Unlike most single phase rotary wing (raft), it employs four main rotor blades, cutting down required storage space.



Source: *Source: The McGraw-Hill Companies, Inc.*

Currently in design stage, amphibious craft is to be powered by two 430-hp engines, which would give it a cruising speed of some 16 kts and a top-end speed of 17.000 ft. Design gross weight listed as 5,000 lb. Four-blade main rotor has 40-ft dia. and cruising rpm of 120. Also under development is HGT-3 (the amphibious version of the *Boeing Vertov*).

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ISTAVA—IN ALL LANGUAGES—STANDS FOR INTERNATIONAL AVIATION FREEDOM SERVICE

AVIATION, March, 1947



Piasecki Aircraft Co. Model 45

A conventional helicopter of the military, Model 45 built for the AAF, the 45 is the only one to have been in a private to the possession of a 100 plane unit to be designated Model 20. The 100 plane is powered by a 155 hp Lycoming giving it a high speed of over 100 mph, a cruising speed of 50 mph, and a climb rate of climb is more than 1,000 ft/min.



Piasecki Aircraft Co.

Now in design stage is the Piasecki Model 45 which is considered to be of all-around excellence. The design features include dual and torque rotors, which permit smaller diameter rotors and a consequent decrease of the rotor inertia length and use of torque rather than the conventional tail rotor power boom. No initial performance figures available.



DeLushier Helicopters, Inc.

Designed for simplified production to reduce low cost two place unit to be powered by 125-hp Lycoming and is designed for 100 mph, 100 mph cruising speed and 200 ft/min climb on 70 mph of fuel. Total weight is 24 ft dia. and cleared engine from 9 to 5 in. With standard steel landing gear, Model 100 has landing gear cooperation with primary landing gear. Weight is 10,000-lb. and 100 ft/min.



Helicopter Engineering & Construction Corp. Model 100

An experimental unit designed to carry pilot and 200 ft of cargo over a range of 150-200 mi. at 80 mph cruising speed. Powered by 125-hp Lycoming engine with standard landing gear which eliminate need for power and 100 ft/min. Total weight is 24 ft dia. and cleared engine from 9 to 5 in. With standard steel landing gear, Model 100 has landing gear cooperation with primary landing gear. Weight is 10,000-lb. and 100 ft/min.



Good Engineering Helicopter

Originally designed with a composite power plant, a single main engine for lifting and forward power and a turbine for forward lift and engine compression, this latter for direct engine drive forward side up to 100 ft/min. However, the small power plant has been added, possibly driven by the motor-driven engine with torque compression coming from engine cylinder.



Kossow Aircraft Corp. Model 100

A three-rotor unit now undergoing flight test but in which no performance data are available. The three-rotor unit is expected to be of rapid take-off and land in any aircraft type. The three-rotor unit is expected to be of rapid take-off and land in any aircraft type. The three-rotor unit is expected to be of rapid take-off and land in any aircraft type.

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Balluff Aircraft Case 88-1

Designed for street-level operations—this tough engine crane can be hoisted to let technicians at a lot of torque, with pilot and no pilot. Powered by one 200-hp Cummins turbo, design high speed is 120 mph, cruising speed is 90 mph, and normal range 180 mi. Gross weight is given as 11,000 lb, weight rating 5,000 lb. Dismantling motor, painting roller. Make chrome steel for anti-brake lock.



Refuge Aircraft Corp. 22-3

Fastness of SR30 and commercial K13-B, developed for Army Air Force, it was first military "baptism" in action during 1964-65. A purpose-built boat for observation, liaison and rescue work, it is powered by a 245 hp Franklin engine giving a top speed of 204 mph, a cruising speed of 82 and initial rate of climb of 3,000 ft/min. Main rotor blades have 70 ft diameter.



Lundberg Hallenphar Co., H.S.

steered type developed by the company for use by AAF. The single plane rotor features retractable landing gear. Powered by a modified 80 hp. Datsun engine, for high speed it runs 300 rpm. Allowed maneuvering, including constant retarding rates which have solid spruce, spars and plywood covering. Unlike most rotary wing craft, blade angle is changed by cylinders placed near rotor tips.



McDonnell Aircraft Corp. 1948.1

What world's first turbo-prop helicopters, now being flight tested for the Navy, use 400-hp T402 engines are mounted sideways on galleys extending out from the fuselage to rotor hubs. Overpowering abilities provide for delivery of power to both rotors even though one engine is not set. Gross weights of many helicopters used for such tests are under 3,000 lb. or 3,000 hp.



Plasma Membrane Transport (Camp, 1989, 1991)

New Young Ellet tested by the Navy, for which it was designed for liaison and rescue work. It carries a crew of two and two passengers, the same as proposed conventional tandem dual-tared P-5. Powered by Continental Wright R-875 of 450 hp driving tandem, counter-rotating three-blade rescue. Gross weight 5,500 lb. Fuselage welded steel tube, fabric-covered.



Buckingham, East 3744-5

Five cylinders, 30 hp. engine is mounted between counter-rotating propellers which are of different lengths—top Mahto being 4 ft. 10 in. long, bottom being 7 ft. 8 in. Mahto Mahto are solid lead-lined metal. Rubber seals from vertical to anti-forward position and water downwash leads made in sheared stainless steels. It is also tank, aluminum covered.

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Two-phase experimental work under development by Army II Forces, featuring water-saturated bamboo culms of 10-ft. diameter, having total blade area of 35 sq. ft. Flower plant is a 300 lb. Cymodocea, but preliminary data hint a not so common variety. Feeding is all within steel tubular construction. Insects eaten: Grass cricket approximately 2,500 lb. and mean weight about 100

**Mercury Aircraft Co.**

Normally in two place observations Helium read. It can also run a structure test on each side of foilage in common work. It has lifted over of two and 20 other points in tests. Powered to 450hp. F&W Mump High speed is 112 mph... cruising speed is 80, in (hike) climb 970 ft/min, and seaway cruising 12,000 ft. Gross weight is 4,000 lb. Weight empty is 3,750 lb.



Military Aircraft 6-5

Developed from the military B-5 (above, right), this common and much less purposed-in current Post Office applications mail delivery projects and is being used in four-state delivery applications. *Automated* is provided for all and three passengers. Powered by a 400hp, PWS Wasp II, it has a six blade high speed at 2800 rpm and cruising speed of over 300 mph.



Sikovsky Aircraft 8-52

See a plus personal assistant's better offering, for the first time, affordable multi-value bundles on standard equipment. We signed the "Life of the Ship" performance that consists of a, traded, leading edge to which are 25,400 trailing edge sections of 640 length. Damage high speed, with 170 lbs. Free line engine in 100 mph, running speed is 10, efflu 1,200 fpm, and sea-to-grilling is based on 30,000 lb



United Heliograph, Inc., Concrete

Developed by Stanley Miller, Jr., youthful pioneer of rearing-type rotines with success, now, Cooperator was scheduled to first public appearance about the time of this issue. Powered by 100-hp, Leaning it is designed for high speed of 60 mph cruising speed of 20-3000-hp, think and service rating of 12,000 ft. Its 34-ft diameter propeller blades are laminated wood.



Clayton-Wiley 9

AN experimental research tool with three-bladed main rotor, in which directional control is achieved by, *et cetera*, The tool is developed in a form of the de Havilland D530 Quad engine and shipboard four-rotor engine, and is controlled through the pilot's vehicle pedals by varying the incidence of the two blades. No performance graphs are available.

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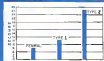
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FAST RESPONSE TO RADIANT HEAT*

The detection of radiant heat is a vital factor in many thermal control systems. The Fenwal THERMOSWITCH Control provides a large area sensitive to radiant heat energy. . . its temperature sensitive outer shell responds rapidly to changes in radiant heat. The THERMOSWITCH Control is the ideal temperature sensing unit for such applications as the control of temperature in ovens, incubators, driers, . . . in fact, wherever radiant heat is a factor in the process. In many instances the overall efficiency of a product or process may be increased by utilizing the high radiant heat sensitivity of the Fenwal THERMOSWITCH Control and providing temperature without physical contact between the thermostat and furnace heated parts.

Chart shows the time required for the Fenwal THERMOSWITCH Control and two other thermostats to break contact following sudden exposure to a source of radiant heat, when adjusted approximately 130° F. above the ambient temperature. Note the fast response of the Fenwal unit.

High radiant heat sensitivity is but one of the outstanding features of the Fenwal THERMOSWITCH Control. For more information about the many facts in Fenwal's line, send for a copy of our Thermoswitch brochure.



- FOURTEEN FACTS IN
FENWAL'S FENWAL**
- 1—Fast reaction time
 - 2—Large heat sensitive area, single heat source
 - 3—Short heat transfer path
 - 4—Low temperature differential
 - 5—Rapidly responsive actuating
 - 6—Standard mounting
 - 7—Adjustable mounting
 - 8—Temperature and sealed
 - 9—Durable construction
 - 10—Adjustable heat value temperature range
 - 11—Adjustable line
 - 12—Rapidly responsive to radiant heat
 - 13—Before sensitivity over adjustable temperature range
 - 14—Rapidly broken

*12 of the "Fourteen Facts in Fenwal's Fenwal".

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Thermoelectric for Complete Temperature Regulation

New Aero Progress Revealed At IAS Technical Sessions

Institute's second postwar annual meeting convenes specialists who cover wide range of advances in design, aerodynamics, structures, propulsion, flight test, meteorology, transport, and spacecraft . . . Given here are brief summaries of presentations, with title-and-subject sections for ready reference.

EVENING sessions commenced at 12:30. Annual Meeting of the Institute of Aeronautical Sciences in New York, Jan. 28-30, was the first paper presented at the Aeronautical Design seminar—Development of F-104 Jet Fighter, by Joseph and Paul J. II and J. II of Hughes Aircraft Co. (HAC).

Highlight of 1948 Shooting Star presentation by Lockheed's C. L. Johnson, was description of six inlet duct installations. Confronted with phenomena of fuel oxygen pipe tube available on ground when fuel was at reasonable length, pipe was finally tried to have inlet, around wing to engine. Accordingly, data were subjected to entirely boundary layer flow arrangement by providing flow along the wing and in the inlet and turn curve. Exploded, too, was low side ducting displaced around installation in fuselage zone.

Also revealed were details of emergency fuel system, for feeding directly into fuel manifold, advantages and position of water injection direct requirement to go from Block 7 to 8; cockpit cooling turbine unit to maintain pilot comfort; fuselage flow leading to effect recovery from overspeeding (speed range); detachable landing system for power plant access; and surface shock detachment also 2 inch high speed contact with ramjet, which resulted in 1949 speed solution. Among major points, factors leading to requiring further development was expansion and identification leading to fuselage, lateral performance, over engine, auto-throttle device, the detection and corresponding means, subhead and energy detection, and film and photo.

Part I of X-51 presentation, by W. C. Williams and R. W. Ryan, Langley Memorial Lab., NACA, was concerned with research objectives and instrumentation. Described in a pilot and design design, the latter, however, was for investigation of compressibility effects, two phases of research. Phase (1) exploratory, to define operational limits, followed by (2) detailed investigation of compressibility effects. For each increase in Mach number, stability and control are to be observed. Flights, now progressing, were explained as preliminary demonstrations. Directional stability of craft was described to be about three times that of conventional plane. Also outlined was various instrument components to be added, together with explanation of maximum power measurement required.



At Henry Night gathering, preceding IAS technical sessions, were (left) R. Williams (HAC) Langley Memorial Lab., and Douglas P. Ryan (HAC) Langley Memorial Lab., who is second in photo, at Institute.

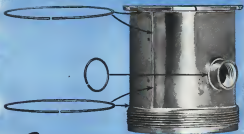
Outlet was described as sealed compartment, designed to lose not more than 1 in. per hr., with pilot access through fuselage door. Double glass plate glass was indicated as general to components when pilot was exiting through apparatus containing glass gel.

Landing gear and flap were specified as pneumatically operated.

Test flight conditions for stressed Mach number over lower transonic flow, was outlined.

Method of attachment to Boeing B-50, another ship was explained. X-51 is placed in a pit, next the B-50 is rolled over pit, then carrier craft is lowered partly into B-50's bomb bay, and landing is effected via standard bomb bay door.

Papers presented at Structures session included: Critical Aspects of Struts Under Tension, by E. H. Rosenberg, Purdue Univ., covering static analysis of this problem, necessary to satisfy differential equations method, supplemented by approximate solution relying on Ritz's principle of energy equilibrium; Design of Drag Wing, by H. E. Rouse, R. E. Rouse, and W. R. Cox, Northrop, assuming that this aerodynamic may be represented dynamically by a plate curved and of variable section with fixed ends in tension and a bending moment in the plate. Completion of Deformation Characteristics of Structures With Deformation and Expansion, by R. L. Levy, Naval Bureau of Standards, covering general method for comparing coefficients, using Cauchy's theorem together with stress analysis of airplane structure based primarily on rigid body methods; Narrowed Methods for Calculation of Elastic Instability, by H. A. Boly, Polytechnic Inst. of Design, developing three numerical methods—documentary, experimental and energy—the evolution of buckling loads, requiring operations cable similar to that used in Stroh's relaxation procedure; Column Characteristics of Variable Properties, by R. W. Tensell and H. C. Engel, Martin, developing theory of column behavior, which considers more than stability and buckling, and properties of line material at various cross



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These little rings of low-temperature EASY-FLO silver brazing alloy make this thermostatically sensitive valve spacer, used in electric refrigeration equipment. Here's how they do it.

The shell is made of 18-8 stainless steel strip welded to hold it. Shell, and 618ings which are brass stampings, are assembled with the 3 rings of 1/32" EASY-FLO wire preplaced, one at the top, one at the bottom and one around the spud. The assembly is liberally fluxed with low-temperature HANDY FLUX. It is then placed vertically in an induction heating coil which brasses one flange and 3/4 of the shell seam. Assembly is then removed and a second heating brazes the other flange the rest of the seam, the spud and a 618ing on the inside. So the 3 little EASY-FLO rings

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Thousands of parts are now being fabricated by EASY-FLO brazing, and more and more are being designed for it. The vacuum-heat production, strong leak-tight assemblies, important savings in man-hours, materials and metals. Good reasons why you should get the facts about EASY-FLO brazing. Bulletin T2-A will give them to you. Ask particularly about the new EASY-FLO 45.

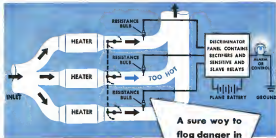


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And here is the Edison Relay that transmits signals from the bulb to the warning device or controls.

The Edison Sensitive Magnetic Relay uses an inverted D'Arsonval movement... the magnet moves inward of the coil. It is compact, sturdy, and operates on as little as 15 milliwatts coil power as a discriminator circuit.

Extremely rapid sensing and alarm in case of excessive duct temperatures is now available in the new Edison Critical Temperature Alarm. This system offers the following desirable features for detecting critical heat in hot wing ducting or space heater ducts:

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- 2 It allows the use of more than one sensing element (sensitive resistance bulb) in the same circuit.
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- 7 Alarm temperature is pre-selected to $\pm 50^\circ\text{F}$.
- 8 A test circuit is provided.

Edison engineers will be assigned to study your problems of duct temperature alarm or control as soon as you notify your interest.

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forms in 1947. Our faith in the future of aviation is bolstered by the fact that we are today investing more money than ever in the research and development necessary to maintain technological leadership.

Aviation People

Gen. E. H. Hensley (photo) engineering man at Boeing Aircraft, has been awarded Gold Medal of Technicians Association International for out-

standing professional achievement in 1949. Qualified with having designed and built world's first multi-engine airplane, he is also recipient of Frank M. Henry Memorial Trophy in recognition of his development of helicopter. He is an honorary member of IAA, and holds honorary degrees in numerous colleges and universities.

Gen. Harry McKinney (photo) has been appointed head of engineering div. of Air Associates. Engineering was his career as commanding officer of an AAF in Pacific area. In '45, he was knighted by King of England with Order of British Empire, and he has been presented with Special Cross



Gen. E. Hensley **Gen. Harry McKinney**
Senior Division of Glens, and Merion Military School of Merion

Fred M. Glens (photo) has been named joint of Air Corps, Inc. Previously, he was v-p. in charge of R&D. Glens was the second vice president of R&D and has been becoming chief-of-staff of



F. M. Glens **A. A. Chabot**

Pacific div. with rank of col. Prior to joining ATC, he served as assistant for AA.

A. A. Chabot (photo) has been appointed chief of maintenance for R&D. In his new post, he will supervise maintenance of aircrafts DO-16 and DO-18. He has been with company 14 yrs., and prior to that he was employed in experimental div. of Chrysler company. **R. H. Lloyd, Jr.**, has been named sales manager for R&D in Hartford, Conn.

Guth F. Brown (photo) has been made joint chief of TRAX International. He joined airline in 30 as co-pilot and has been a v-p. since '42. ATC's chief



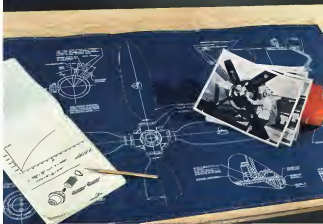
G. F. Brown **J. P. Sullivan**

of World War II, he was assigned to airplane and direct flight from training school opened by him at Albuquerque, N. M.

John P. Sullivan (photo) has been promoted to post of president with the Hamilton Standard Propellers div. of United Aircraft. He joined div. in '38 and in '40 served as personnel supervisor of plant in Rhode Island. Prior to, he was employed in General Motors div.

James G. Ray, v-p. of Southern Aircraft, has been made chairman of ATC's working committee on freight aircraft. With **Robert H. Lane, v-p.** of Air America, he has been elected **J. Richard**

EVANSTON, N.Y., 1947



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Because of its self-contained construction, the Aeroquip requires a minimum of maintenance time. As a consequence, this propeller contributes to maximum utilization of the airplane whether in commercial or military service.

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DIVISION OF CASTLE BILLS CORPORATION
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Hydro-Selective propeller blades are built of Duralumin plastic.

- 1—Reversible blades are **POSITIVE PROPS** . . . will not strike, stall, warp or twist under the most adverse weather conditions.
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Look for folder giving descriptions of Hartzell Hydro-Selective, Ground Adjustable (also with Reversible plastic blades) and Fixed Pitch propellers.

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*Complete single ADF installation 42 1/2 pounds



Newest product of Bendix Flight Engineering—the NA-2 ADF System—developed by the team engineers who designed the world-famous MN-31 and NA-400. Synthesizes various advanced aids for improved long-range performance, reduced air drag and weight with increased flexibility of installation. Combination of loop and antenna transmitters and receiver and a complete, accurate R.F. tuning unit adjacent to the emergency, search loop and search antenna render us greatly improved accuracy, clear other ADF systems.

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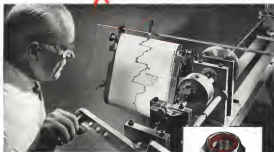
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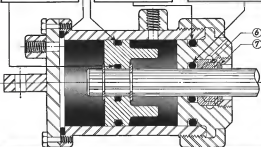
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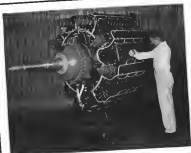
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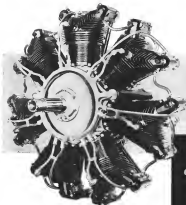
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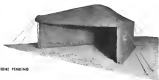


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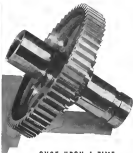
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AVIATION, March, 1947

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By Thomas E. Griffin, Bureau Manager, C.A.A., State of Idaho, Harry F. Low, Manager, Washington National Airport, and John W. Condon, Chief of Airport Design Unit, Port of Boston, C.A.A.—720 pages, 6 x 9, illustrated, \$2.00

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Aerodynamics

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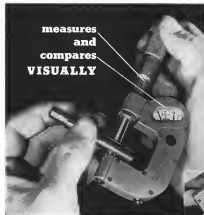
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3/4" Inlet Valve

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1/2" Inlet Valve

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1/4" Inlet Valve

1/8" Inlet Valve



1/8" Inlet Valve

1/16" Inlet Valve



1/16" Inlet Valve

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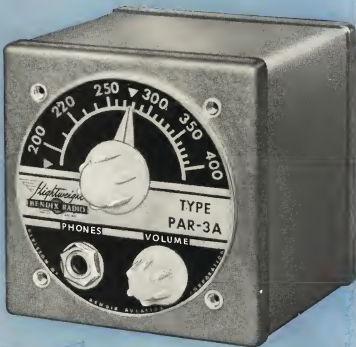
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